SOCIOECONOMIC STATUS, EMPLOYMENT, MIGRATION AND COMMON MENTAL DISORDERS IN OLINDA, NORTHEAST BRAZIL

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DEDICATION

In memory of my parents Lúcia and Bernardo

To Leonardo, Maria Luiza and Francisco

ABSTRACT

A cross-sectional study was carried out in a low income area of Olinda, in the state of Pernambuco, Northeast Brazil, to investigate the specific links between social class and the prevalence of common mental disorders (CMD) assessed by the Self Reporting Questionnaire (SRQ-20). The analysis brought together a wide range of potential explanatory variables grouped under four headings: demographic characteristics, socioeconomic status (SES), employment and migration.

Prior to adjustment, statistically significant associations were found between CMD and all SES variables (literacy, years of schooling, own occupation, income distribution, housing conditions, possession of household appliances), except housing tenure. After adjustment for all measures of SES, gender, age and marital status, CMD was more common in those with less education (χ^2 for linear trend=10.37, df=1, p<0.0001) and low household *per capita* monthly income (χ^2 for linear trend=5.21, df=1, p=0.02). Unemployment and informal work were independently associated with CMD among females (OR=2.66, 95% CI 1.1-6.3 and OR=3.02, 95% CI 1.3-7.2, respectively), but not among males (OR=1.77, 95% CI 0.8-3.9 and OR=1.08, 95% CI 0.5-2.4, respectively), though the interaction between employment status and gender was not significant. In the univariate analysis, migrants showed a higher prevalence of CMD than the native population. After controlling for gender and age, the association between migration and CMD was markedly reduced and became statistically non significant (OR=1.28, 95% CI 0.9-1.9). Validation of the SRQ-20 suggested that females, elderly, the less educated, housewives, migrants and those with the lowest

income tended to over-report on the SRQ-20 compared to a psychiatric interview. These findings could be explained simply in terms of gender differences, suggesting that over-reporting was mostly related to being female.

Education, representing early circumstances in life, seems to be the most powerful indicator of social class disadvantages in this area. Our findings suggest how the contribution of later socioeconomic conditions to the prevalence of CMD, such as occupation, housing conditions and household appliances, could be understood in part by their association with education. This is not to imply that later circumstances were reflecting only the influence of earlier life. Unemployed, informal workers and those belonging to low income households tended to be less educated. However, employment status and income showed an association with CMD independent to that of education.

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CHAPTER 1 - INTRODUCTION

1.1 - INTRODUCTION

Anxiety and depression are widely acknowledged as an important cause of disability and have been identified as a significant public health problem [World Bank Report, 1993]. These disorders are common, disabling [Wells et al., 1989; Goldberg and Huxley, 1992] and lead to considerable use of health services in both primary and secondary care [Goldberg and Huxley, 1992].

In the community, an important number of individuals cannot be categorised as either anxious or depressed because they present a wide variety of both symptoms [Kendell, 1975]. This mixed aspect is more common among the less severe form of both disorders, which constitute the large majority of cases in the general population. Patients with psychotic illness characterised by rare symptoms also tended to possess a common core of neurotic symptoms [Maxwell, 1972; Sturt, 1981]. Furthermore, several measures of

depression and anxiety show high correlation and poor discriminant validity. Clark and Watson [1991] state that nearly 50% of all patients diagnosed with anxiety also meet the diagnostic criteria for depressive disorder and vice-versa. This correlation is not a superficial one, due to methodological problems of instruments, but a `deeply rooted' problem, suggesting that depression and anxiety are both the expression of a common underlying state or trait [Clark and Watson, 1991]. According to Kleinman [1988], depression and anxiety need not be distinguished from one another because they share the same social origins. Therefore, surveys usually compress the disorders into a broader diagnostic category - common mental disorders [Finlay-Jones and Burvill, 1977; Jenkins, 1985; Cheng, 1988; Goldberg and Huxley, 1992]. Common Mental Disorders (CMD) is a term coined by Goldberg and Huxley [1992, pp. 7-8] to describe "disorders which are commonly encountered in community settings, and whose occurrence signals a breakdown in normal functioning". CMD, also referred to as neurotic psychopathology, mainly consist of symptoms like insomnia, fatigue, irritability, poor memory/concentration and somatic complaints [Cheng, 1989; Goldberg and Huxley, 1992].

The distribution of CMD in the community, as most medical conditions, is continuous [Anderson et al., 1993] and the results from the OPCS National Survey of Psychiatric Morbidity [Meltzer et al., 1995] did not find any boundary between normality and abnormality. Though the cut-off point between what is normal and what is abnormal is an artificial distinction, epidemiologists prefer dichotomous classifications because it is easier to think about population disease as a prevalence rather than a mean number of symptoms [Lewis, 1996]

For epidemiological research, highly structured interviews such as the Diagnostic Interview Schedule (DIS) [Robins et al, 1981] and the revised Clinical Interview Schedule (CIS-R) [Lewis et al., 1992], have been designed to be used by non-medical personnel. In addition, self-administered questionnaires such as the General Health Questionnaire (GHQ) [Goldberg, 1972] and the Self Reporting Questionnaire (SRQ) [Harding et al., 1980], have been developed to asses the prevalence of CMD at both general practice and community settings[1]. The arrival of such instruments was of particular relevance in developing countries where the number of psychiatrists is usually very low and the low cost and speedy completion were attractive to limited budgets.

1.2 - THE IMPORTANCE OF COMMON MENTAL DISORDERS

Recent estimates of the prevalence of CMD in community surveys have ranged from 7% to 30% [Cox et al., 1987; Goldberg and Huxley, 1992] and studies carried out in Western countries found that at least 90% of psychiatric illness in the general population is due to depression and anxiety [Goldberg and Huxley, 1992].

The public health impact of CMD can be also evaluated by their financial costs. In primary care settings in Britain, they are almost twice that of disorders in psychiatric services and nearly the same as for hypertension [Goldberg and Huxley, 1992]. Broadhead et al. [1990]

[1] In developing countries, GHQ and SRQ are also administered by interviewees because of low rates of literacy.

found that mild and moderate depression resulted in 51% more days lost from work than DSM-III major depression. The total annual cost of the CMD in the UK may amount to as much as £6 billion, of which more than two-thirds results from lost productivity [Croft-Jefferys and Wilkinson, 1989].

Kleinman [1991] suggests that in African, Asian and Latin American health services CMD have a higher prevalence than infectious diseases. According to the 1993 World Bank Report `Investing in Health', depressive disorders were the fifth most important contributor to the disease burden among women in developing countries, after maternal and selected communicable diseases. Although there are few studies on CMD in urban areas of the `Third World', Brazilian epidemiologists have lead the way in a number of pioneering studies. Table 1.1 summarizes the most notable studies in primary health care attenders and Table 1.2 presents the Brazilian population-based surveys.

Table 1.1 - *Prevalence of CMD in primary health care attenders - Brazil*

Author	Santana 1977	Busnello 1983	Mari 1984	Mari 1987
City	Salvador	Porto Alegre	São Paulo	São Paulo
Region	Northeast	South	Southeast	Southeast
Measure	*	SRQ-20	CIS	GHQ-12+SRQ-20+CIS
Sample Size	208	242	121	260
Prevalence	15.0%	53.7%	46.0%	52.3%

* The case definition was based on diagnosis suggesting psychiatric morbidity and on psychotropic prescription

The prevalence of CMD in Brazilian urban areas found in the studies reviewed above varied to a considerable extent. It is difficult to predict the extent which rates actually differ. In

primary care attenders social and demographic characteristics differ markedly from those of community residents. It is widely known that the upper-middle and upper classes in Brazil use only private medical care. Thus, the differences could be due in part, to variation in service utilization rather than to rates of CMD. Furthermore, there is not enough information

Table 1.2 - *Prevalence of CMD in Brazilian population-based surveys*

Author	Santana 1982	A-Filho 1982	Reichenheim 1986	Almeida-Filho et al. 1992[1]			Lima
City	Salvador	Salvador	Rio de Janeiro	Porto Alegre	Brasília	S.Paulo	Pelotas
Region	Northeast	Northeast	Southeast	South	Central	Southeast	South
Measure	QMPA	QMPA	SRQ-20	QMPA + DSM-III[2]			SRQ-20
Sample Size	1547	1531	620	2384	2345	1742	1277
Prevalence	21%	24%	36%	43%	51%	30%	22.7%

[1] Brazilian Multicentric Study of Psychiatric Morbidity
[2] See below for definitions

to determine whether the difference lay in the prevalence of CMD or in the likelihood of detection. The prevalence estimated should be interpreted not absolutely but with reference to the criteria used for case definition. Slight differences in the threshold for recognition of disorder on interview measures will produce artefactual differences in rates. For example, the preliminary results of the Brazilian Multicentric Study of Psychiatric Morbidity (not presented in Table 1.2) found a prevalence of 16.7%, 15.6% and 18.1% for Porto Alegre, Brasília and São Paulo respectively [Guerra and França, 1990]. However, the prevalence standardized by age and adjusted for the differential performance of the Adult Psychiatric Morbidity Questionnaire (QMPA), using the DSM-III Symptom Checklist as gold standard (Table 1.2), was 43%, 51% and 30% respectively [Almeida-Filho et al., 1992].

1.3 - BRAZIL: A GIANT WAKES UP TO PROGRESS AND INEQUALITY

Covering an area of 8.512 millions km^2, Brazil occupies 47% of South America and is the fourth largest country in the world.

FIGURE 1.1 - MAP OF BRAZIL AND PERNAMBUCO STATE

Source: Anuário Estatístico do Brasil, 1992

Brazil's huge population, 159.1 million [World Bank, 1996], is a mixture of Portuguese, African, Amerindian and many other nationalities, including German, Italian and Japanese.

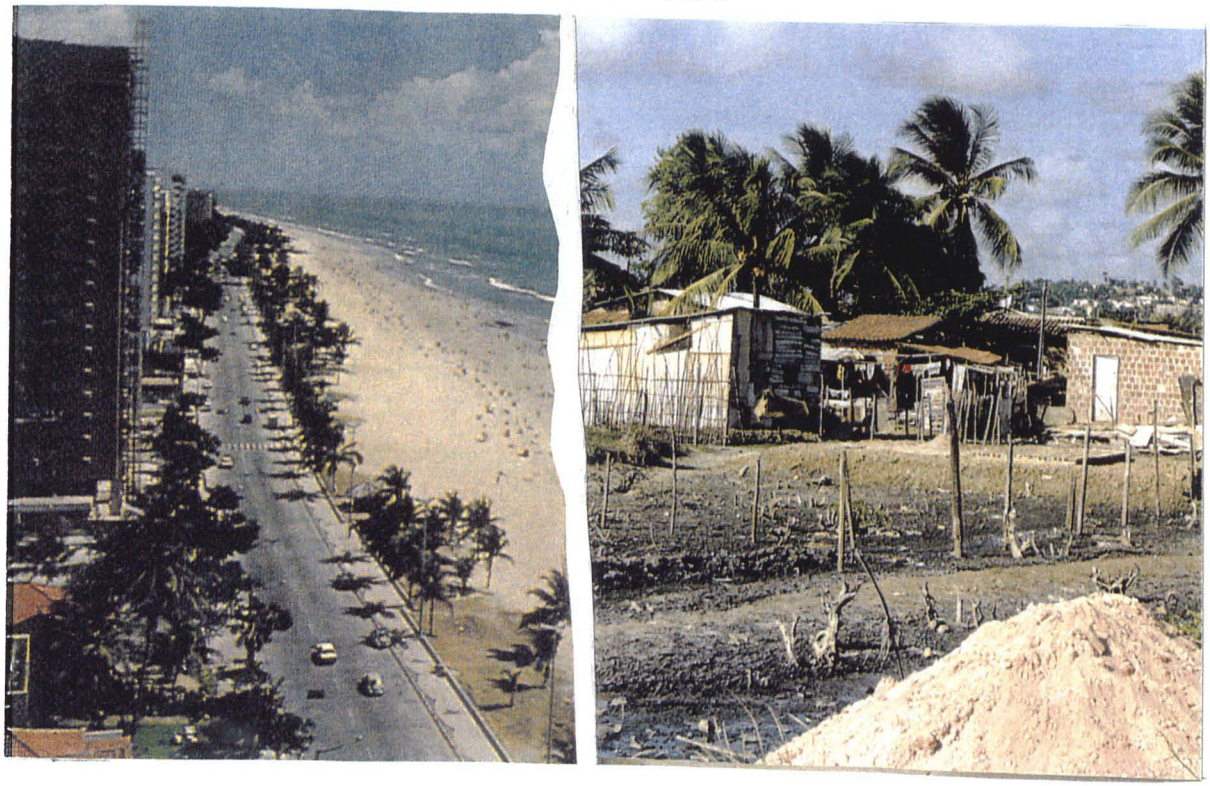
Between 1970 and 1980, Brazil's population was growing at an annual rate of 2.4%. It has declined to a rate of 1.7% between 1990 and 1994 and is expected to stabilize at 1.4% per annum by the end of this century. The population will be near 175 million by the year 2000 [World Bank, 1995].

Since 1950, massive internal migration took place with the industrialization of the country [Oliveira and Roberts, 1996]. In 1994, according to the 1996 World Development Report, 77% of Brazilians were concentrated in the cities [World Bank, 1996]. Rural-to-urban migration has brought millions of families to large cities in search of jobs, education, health-care and hope. The rapid growth of cities has been accompanied by an increase in urban inhabitants who live in grossly substandard, overcrowded conditions. The pace of urbanization exacerbated the problem caused by the low priority given by the Government to provision of accommodation and urban basic services and increased the level of unemployment, delinquency and environmental pollution [Singer, 1983]. The determinants and consequences of rural-to-urban migration will be returned to in section 2.3.1.

Brazil is a country of great wealth and deep poverty and the benefits from national growth have not `trickled down' to the poorer sectors of society. The Human Development Report 1997 [United Nations Development Programme - UNDP, 1997] reinforces this in its calculation of an income-distribution-adjusted Human Development Index (HDI).

According to the report, Brazil has the second most unequal distributions of income - the top 20% of the population receives 32 times the income of the bottom 20%. These disparities have grown over the past three decades. In 1960, the poorest 50% had 17.4% of the share of the GNP income and in 1980 it dropped to 12.6% whilst the richest 10%, which had 39.6% in 1960 [Pereira, 1988], shared 51.3% in 1989 [World Bank, 1996]. During the 1970s, the so called `miracle years', while the Brazilian growth national product was increasing at rates of more than 10% a year, the infant mortality, basically due to infectious disease, also increased and urban working conditions and salaries decreased [Kowarick, 1997]. The concomitant wealth and poverty are distributed in the country leading to a system where spots of high income and modernity coexist with slums and shanty towns dwellers.

FIGURE 1.2 - PROSPERITY ONLY FOR THE FEW



This is not to suggest that the low-income population is a homogeneous group. Among them, there is a difference between those with some degree of choice over where to locate and those with virtually no choice who are severely constrained by their environment.

FIGURE 1.3 - A REDBRICK HOUSE AND A SHACK IN AREA II OF OLINDA

Urbanization, industrialization and the changes in the social structure have resulted in a greater heterogeneity in patterns of stratification with marked regional contrast [Oliveira and Roberts, 1996]. The northeast of Brazil which comprises 29% of the population and 18% of the national territory has a disproportionate share of Brazilian poverty [Duchiade, 1995]. This region has the lowest average income and the largest inequality of income distribution [UNDP, 1997].

As in many developing countries, the Brazilian government's priorities have been directed to the health of the economy rather than to the health of its people. Health and ill-health is also unequally distributed within the society. A complicated mixture of international and national economic-political interests has prevented the 10th largest world economy being able to fully cater for at least two-thirds of its population. Urban poverty is one expression of this anomaly. Disease patterns reflect the problems of both underdevelopment and industrialization. From the first, the Brazilian poor carry a heavy burden of infectious disease and malnutrition, while from the second they suffer a typical spectrum of chronic and social disease. The infant mortality rate is 57/1000 live births and the life expectancy at birth is 67 years [World Bank, 1996]. These indicators had significant urban-rural and regional differences during the period 1970/80[2]. While the infant mortality rate for the country as whole was 88/1000, it was 93/1000 in rural areas and 85/1000 in urban areas. In the South it was 62/1000 and 121/1000 in the northeast [Fundação Instituto Brasileiro de Geografia e Estatística, - IBGE, 1992].

Typical `modern' diseases such as coronary heart disease, neoplasm, mental illness, suicide,

2 Urban/rural and regional differences are not available for the period 1980-90.

homicide, and road traffic accidents are now major public health problems [Possas, 1989]. In 1989, it was estimated that 14% of all premature retirements were a result of mental-ill health [World Bank, 1989]. Violence (mostly homicides) accounted for 86% of all deaths in boys aged 15 to 19 in São Paulo in 1992 and over half of all deaths in those aged 5 to 14 [Secretaria de Planejamento do Município de São Paulo - SEMPLA, 1992]. Deaths rates from homicides were 11 times higher for adolescents boys in deprived areas than for adolescents in wealthier areas [Stephens et al., 1994]. According to Sá et al. [1978], the costs involved in treatment, road traffic accidents, labour injures, absenteeism and lower production and judiciary costs due to alcoholism represented 5% of the country's GNP.

In the 1980s, as a consequence of political liberalization after 21 years of military dictatorship, Brazil experienced significant advances in the organization of its labour force, expressed through the creation of powerful centralized trade unions. Between 1982 and 1984 there were 920 strikes, a number which reached 3,000 in the following 3 years and 4,597 in the last 3 years of the decade [Kowarick, 1997]. However, the reinvigoration of union struggles did not succeed in stopping the decline in salaries and the increase in unemployment levels. In 1991, the average salaries of metallurgical workers in São Bernardo do Campo and Diadema in the state of São Paulo, home of the best organized and most combative trade union in the country, were 30% less than 1983 wages [Kowarick, 1997]. At the same time, one third of all positions disappeared.

In the countryside there has been an increase in the number of conflicts between a mass of peasants struggling to retain or gain access to land on which they work for subsistence and a few landowners, who own millions of acres of land, 42% of which is lying idle, not even

grazed by cattle [Vidal, 1997]. Recently, the landless movement - Movimento dos Sem Terra - demanding urgent land reform, has attracted international attention to the struggle of the landless in a country 66 times larger than Britain where 4 millions peasants share less than 3% of the land.

The dominant image of Brazil is now of a country that is unable to progress toward the consolidation of individual and collective rights. We are left with a society full of contrasts and inequalities that has done little to diminish the polarization of the social structure as shown by a high skewed income distribution [Oliveira and Roberts, 1996]..

1.4 - STRUCTURE OF THE THESIS

The **introductory chapter** provides a general background of the CMD and of economy and health in Brazil. **Chapter 2** contains a review of the literature on social determinants of CMD and sets out the study objectives. **Chapter 3** describes the methods used for the study design, data collection and analysis. **Chapter 4** presents the results of the study. **Chapter 5** summarizes and discusses the most important findings obtained in the previous chapter. Finally, **chapter 6** presents the main conclusions and makes recommendations for public health intervention and further research.

CHAPTER 2 - LITERATURE REVIEW

It is beyond the scope of this work to cover the very large literature on CMD; nevertheless there are some contributions which are of fundamental importance to the understanding of the contemporary views of this topic. Particular consideration will be given to social determinants of CMD, focusing on socioeconomic status, employment and rural-to-urban migration.

2.1 - SOCIOECONOMIC STATUS (SES)

In general, an inverse relationship has been found between psychopathology and socioeconomic status [Dohrenwend and Dohrenwend, 1974; Goldberg and Huxley, 1992]. Among lower SES groups, higher morbidity rates include conditions such as schizophrenia, alcohol abuse or dependence, major depression, cognitive impairment, anti-social personality [Holtzer et al., 1986, Dohrenwend, 1983], depression, unhappiness, worry, anxiety, and hopelessness [Dohrenwend, 1983; Syme, 1991].

In the analysis of health and disease in the socioeconomic context, epidemiologists borrow

controversial concepts from the social sciences and the incorporation of social class into epidemiological research has been primitive and poorly discussed [Marmot et al, 1987; Dohrenwend, 1990]. Terms like social status, social inequality, social stratification, socioeconomic status and social class have been used interchangeably without theoretical distinctions [Liberatos et al., 1988; Dohrenwend, 1990]. According to Scase [1992, p.1], "of all concepts used by sociologists for describing and explaining social relationships, social class is probably the most ambiguous, confusing and ill-defined". Wright [1979] feels similarly and suggests that the fundamental debate relates to the meaning of class rather than its definition. An additional complication has been the fusing of class and occupation in the sociological analysis of inequalities. In England, social class has been based on the Registrar-General's grouping of occupations. The Registrar-General's social classification sorts the working population according to skill level of occupation, ranging from the professional groups in social class I to the unskilled in social class V. Its validity as a measure of social class has been criticized on many sides. The first group of criticisms is related to the heterogeneity of each occupational class. It is a matter of which social groups are being compared and how accurate is the classification into the different groups. As this is effectively a grading of occupational status, it fudges many of the differences that exist within occupational categories such as education and earnings [Wilkinson, 1996; Lewis, 1996]. Furthermore, as increasing numbers of people spend larger amounts of time outside the labour market, usual occupation becomes a less reliable indicator [Bartley et al., 1994]. Additionally, the social prestige of an occupation varies according to the division of labour in different countries and this increases the difficulty of comparing health inequalities internationally [Wilkinson, 1996; Lewis, 1996].

From a quite different perspective, occupationally-defined social classes have been

criticized for their uncertain relation to sociological concepts of class. For Jones and Cameron [1984, p.37], this "is an empiricist methodology which has been engineered to conform to the prejudices of narrow minded professionals ... and is probably derived from their own class experience". Social class and socioeconomic status measures such as occupation, education and income, stem from two different theoretical orientation and focus on different aspects of inequality [Dohrenwend, 1990; Wohlfarth, 1997]. While social class focuses on control as the essence of socioeconomic inequality, SES focuses on prestige [Wohlfarth, 1997]. According to Wright [1979, p.7], "a class structure defined in gradational[3] terms remains fundamentally a static taxonomy. Such definitions may provide a basis for descriptively labelling people in terms of the distribution of valued rewards, but they are incapable of designating the dynamic social forces".

The final and perhaps the most persuasive criticism, is related to the place of social class in the causal hierarchy. Although "social class holds the potential for examining the way that the organization of society affects health" [Marmot et al.,1987, p.112], it is not a variable like any other [Marmot et al.,1987; Possas, 1989]. It is a theoretical concept, hence abstract[4], with broader explicative power and it should be placed in the top of the causal hierarchy. Social relations determined by classes' conflict in the capitalist mode of production, can be summarized in some of its socioeconomic outcomes like occupation, for example, but this

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3 For Wright [1979], there is a distinction between gradational and relational views of class in sociology. The former defines class gradations in terms of income or social status. In contrast, relational concepts define classes by their structured social relationship to other classes. "Classes are not defined simply relative to other classes, but in a social relation to other classes" [p.6].

4 "Within Marxism,...abstract concepts are understood as designating the most fundamental *real determinations* within a given process. Their function within the theory is less to simplify reality than to penetrate reality. Abstractions are thus not merely arbitrary, analytical conventions used to formulate generalizations about the world; they are conceptual tools necessary to construct real explanations of the world. In a sense, within Marxism, the most abstract concepts designate the most real determination of social relations (real=fundamental fundamental), whereas within positivism, the most abstract concepts are the least real (real = empirical, and thus complex)." [Wright, 1979, p.25]

outcome is only one level of the process and is a limited manifestation of a highly complex social relationship. Social classes are social forces acting in a society [Rivas, 1977] and social classes' differences in ill-health are not evident without mediation [Possas, 1989]. Social forces determine different lifestyles, material standards of living and working conditions and these are in turn the proximate determinants of disease distribution in a population [Possas, 1989]. According to Marmot et al. [1987] it is necessary to focus on the intermediaries between social class and disease, without losing sight of the social causation. This will be the posture adopted here. The term occupational social class, rather than social class, will be used to summarize findings where occupation has been used as surrogate measure of social class.

2.1.1 - Links between social class and CMD

There are many possible intermediaries between social class and CMD. They can be related to early life such as economic hardship during childhood and education or related to recent socioeconomic circumstances such as unemployment, occupation, income and material standards of living. In addition, they may vary over time, across culture and by disease category [Marmot et al., 1987]. The search for specific links may lead to public health benefits since they are more amenable to changes. As the common feature is relative position in the social hierarchy (social class), "changing any other factor is unlikely to abolish class differentials in health, if general social differentials persist" [Marmot et al., 1987, p.129].

Education

CMD has been differentiated by educational level [Power and Manor, 1992] and various Brazilian population-based studies [Santana, 1982; Mari and Andreoli, 1992; Lima et al., 1996] in urban areas have shown a consistent association between CMD and poor education. For some researchers, educational level is a more useful indicator of socioeconomic status than occupational class [Kitagawa and Hauser, 1973] and income [Duncan et al., 1993] because it is equally available for men and women and is specially useful for international comparisons as it overcomes the difficulties of contrasting occupational structures [Valkomen, 1989]. There are still others [Brown et al., 1986; Power and Manor, 1992] who suggest a direct role of education on psychological health due to its influence on aspirations and self-images, including self-esteem and perceived efficacy in general [Brown et al., 1986] and attitudes about home and work roles among women [Warr and Parry, 1982]. On the one hand, education is influenced by class of origin and school attainment may represents several aspects of the social and material circumstances of the family at early life. On the other hand, education provides the qualification to acquire certain occupations later in life [Halsley et al., 1980; Goldthorpe, 1980].

Occupation

The criticisms of using occupation as social class were referred to earlier in this chapter. To argue that social classes and occupation are theoretically different is not to argue that they are empirically unrelated. According to Wright [1979],

> *"occupations may constitute one critical basis for the internal division within classes. Occupational locations determine intraclass strata through two primary mechanisms: 1)occupational positions reflect different market capacities and thus contribute to reproducing privileged segments of classes at the level of exchange relations (i.e., income); 2) Occupational positions are one of the central criteria for status and thus contribute to reproducing privileged segments of classes at the level of ideological relations" [p.121].*

Furthermore, it is possible to suggest that certain aspects of occupations may create an increased risk for CMD among the workers. According to Gardel [1982] there is a demonstration that a person's position in the work environment "gives rise in most people to certain types of reactions which are harmful to the individual as a biological and social being and thus are of profound importance for him personally as well as for the industrialized society" [p.65]. He goes on to state that dissatisfaction and strain may lead to impaired physical and mental health [Gardel, 1982]. Occupational stressors have consequences for health, primarily when workers do not have sufficient resources for coping with these stressors [Syme, 1991]. Scandinavian research related to work conditions established that the following conditions have negative effects in workers: machine pacing of working rhythm and technical control of work methods; monotonous, repetitive working activating only a limited part of total human capabilities; lack of possibilities for contact with other people as part of ongoing work; piece-rate and related payment systems, which are often detrimental to an adherence to safety requirements; and authoritarian and detailed control of the individual, be it through foremen or impersonal systems, eg., computer-based planning systems [Gardel, 1982].

Most research on the effect of working conditions on CMD has been conducted in developed countries. In developing countries, there is a high proportion of people working outside the realm of formal labour market. The consequences of informal work to mental health will be presented in section 2.2.

Unemployment

There is evidence that the link between recent socioeconomic circumstances as unemployment, for example, and CMD is possibly stronger than that for earlier influences [Power et al., 1991]. The association between unemployment and CMD will be discussed in section 2.2.

Income

One possible link between social class and CMD is low income. For Possas [1989], low income is likely to act through a number of inter-related proximate determinants such as poorer housing, poorer diet, fewer social amenities and adverse social environment. On the other hand, Lewis [1996] advocates an independent effect of income on the prevalence of CMD due to the increased stress and uncertainty that is a consequence of low income. For Wilkinson [1996], "income has such a powerful direct effect on so many facets of people's lives, that a direct effect on health is very much more plausible than other explanations" [p.81].

The ever growing levels of inequalities within and between countries has stimulated recent conceptual advances in the understanding of the psychological implications of the social

condition of poverty and suggests that the association between health and income distribution is a result of factors to do with relative rather than absolute income [Wilkinson 1992, 1996, 1997; Stephens, 1996]. Wilkinson [1992], emphasises that those countries with the narrowest differences between rich and poor - more egalitarian societies, have lower mortality rates. For the author [Wilkinson, 1997], what affects health, at least in the developed world, is not primarily the direct effect of material standards, but social position within societies. He attributes a psychological repercussion to the socioeconomic context that influences the health of the population and has hypothesised that the association between relative poverty and increased mortality is more a matter of the indirect (increased exposure to behavioural risk resulting from psychosocial stress) and direct (physiological effects of chronic mental and emotional stress) effects of psychosocial circumstances associated with social position. The mechanism involved is one of `cognitive comparison' whereby people are made aware of the vast differences in socioeconomic status that prevail and the knowledge of `how the other half live' affects psychosocial well-being and thus overall health status. He [Wilkinson, 1996] goes on to state that

> *"an association between income distribution and homicide, violent crime, alcohol-related deaths, traffic accidents and deaths from `other injuries' gives strong support to the view that the differences in income distribution have widespread psychosocial effects" [p.158].*

Material standard of living: housing tenure, housing conditions, possession of household appliances and access to car

There is an increasing literature documenting that CMD is associated with housing tenure [Rodgers, 1991; Power and Manor, 1992; Meltzer et al., 1995], housing conditions [Gabe and Williams, 1987; Birtchnell et al., 1988], possession of household appliances [Murphy et al., 1991] and access to cars [Stansfeld and Marmot, 1992; Meltzer et al., 1995]. These have been suggested as powerful indicators of social disadvantage because they represent available income, control of resources and wealth [Power et al., 1991; Stansfeld and Marmot, 1992].

2.1.2 - Socioeconomic status and CMD studies

The inverse association between socioeconomic status and overall psychopathology has been observed throughout the world, regardless of gender or the specific methods used to assess SES or mental illness. However, whereas major psychiatric morbidity is more common in people of lower social position[5], conflicting evidence has emerged from the literature on CMD and SES, as presented below.

[5] Probably as a result of a `drifting' effect caused by the illness rather than an indication of the socioeconomic background of the patient.

International studies:

Brown and Harris [1978], using a modified version of the PSE (Present State Examination) in a study of a sample of women in Camberwell, London, found that the rates of depression were four times as high among working-class as middle-class women, classified according to the occupation of the head of the household. In Bebbington et al. [1981] study using PSE in the same area of London, occupational social class was significantly associated with overall psychiatric morbidity in males, but not in females. The type of housing which women live in was associated with depression [Birtchnell et al., 1988] and overcrowding has also been found in association with elevated GHQ (General Health Questionnaire) scores [Gabe and Williams, 1987]. Hodiamont et al. [1987] using the GHQ and PSE in a two-phase case identification found an inverse relation between SES and total psychiatric morbidity for males in an urban area in Holland. Vazquez-Barquero et al. [1987] using a similar methodology in a rural community in Spain, also found an inverse relation between total psychiatric morbidity and SES for males, but not for females. Eaton and Ritter [1988] reported strong inverse relationship between a scale of DIS-DSMIII (Diagnostic and Statistical Manual of Mental Disorders) symptoms and both education and income in Baltimore. Longitudinal research in Stirling County [Murphy et al., 1991] indicates that during the 1950s and 1960s the prevalence of depression, identified by a computer program called DPAX (the DP stands for depression and the AX for anxiety), was significantly and persistently higher amongst those at the lower end of the socioeconomic hierarchy, assessed by an index of material possessions of the household unit. Anxiety showed a less clear picture. After 16 years of follow-up, the incidence of anxiety did not show a consistent pattern, but the incidence of depression showed a gradient, but not significant, trend. In

addition, there is also a longitudinal evidence for the association between poverty (defined using federal poverty guidelines) and psychiatric morbidity from the New Haven Epidemiologic Catchment Area study [Bruce et al., 1991], and respondents in poverty have a twofold increased risk for a new episode of at least one DIS/DSM-III Axis I psychiatric disorder (alcohol abuse/dependence, bipolar mania, drug abuse/dependence, major depression, obsessive-compulsive and panic disorders, phobia and schizophrenia) in a six-months period of follow-up. In males at the 36-year follow-up of the 1946 birth cohort in Britain, CMD varies with housing tenure but not with occupational class, education and personal income. In females, rates did not differ by husband's occupation but were higher for those in rented accommodation, with unskilled manual jobs and less education. Many of these associations were reduced or eliminated by adjustment for financial hardship [Rodgers, 1991]. In the 1958 birth cohort [Power et al., 1991], odds for CMD, assessed by the Malaise Inventory and by psychological morbidity between ages 16 and 23 for which specialist help was sought, were significantly greater in occupational social classes IV and V than in I and II. After accounting for earlier circumstances, occupation was no longer significant, except for Malaise in women, while significant differences persisted for housing tenure, income and education. Stansfeld and Marmot [1992], using the GHQ-30 in British civil servants, found that the prevalence of CMD was greater in males in the lower employment grades than higher employment grades. In females, the gradient was reversed and statistically significant different from that in males. An association was also found between car ownership among males, but not females. No significant association was found between education and tenure of accommodation and CMD. The findings from the OPCS Survey of Psychiatric Morbidity in Great Britain [Meltzer et al., 1995] show that occupational class V has twice the odds of being a case of CMD (CIS-R, Clinical Interview

Schedule - Revised) than class I. The odds ratio for being a case of CMD in those who rent their houses is 1.9 compared to house owners and those who have access to two or more cars have half the odds of being a case compared to those with no car. Weich and Lewis [in press] found that CMD, assessed using the GHQ was associated with poor material standard of living, assessed as annual household income, independent of occupational social class. An association was also found between occupational social class of the head of the household among women, but not men, after adjusting for material standard of living.

Brazilian studies

The various Brazilian population-based studies in urban areas have shown an association between CMD, low income and poor education. Santana [1982], using a standardized questionnaire to detect psychiatric symptomatology - the Adult Psychiatric Morbidity Questionnaire (QMPA) found higher rates for those with less education, low income and manual jobs. Although, in her study, the association between CMD and income and CMD and occupation was not statistically significant. The preliminary results of the Brazilian multicentric study of psychiatric morbidity [Guerra and França, 1990], have shown an inverse relationship between SES, measured by income level, and the prevalence of CMD. Mari and Andreoli [1992] found that the prevalence rate of any psychiatric disorder, also assessed by the QMPA, was 70% higher among individuals with less than 4 years of school, compared to those with more years of schooling. Among those with income per capita of US$50 or less the prevalence was 45% higher than among those with higher income. Lima et al. [1996] found that less education and low income is associated with higher prevalence of CMD, detected by the SRQ-20 (Self Reporting Questionnaire).

The lack of a consistent association between CMD and SES may results from methodological variation, particularly in respect of psychological instruments, but also in measures of SES, as highlighted earlier in this chapter. The validity of screening instruments to assess CMD depends on both: reliability and on the equivalence of the methods used to assess the disorder and the estimated rates should be interpreted not absolutely but with reference to the criteria used for case definition. Surtees et al. [1983] showed that the relationship between SES and CMD in women in Edinburgh varied slightly with three diagnostic systems. In addition, Stansfeld and Marmot [1992] have also demonstrated a bias in the assessment of CMD with the GHQ-30 that reduces the social gradient because those in the lower employment grades are less likely to report symptoms relative to those in higher employment grades. The results from studies carried out in Brazil [Mari and Williams, 1986] and in Chile [Araya et al., 1992], showed a reverse pattern and misclassification by the GHQ-12 and the SRQ-20 was significantly associated to education and gender, males being more likely than females to be misclassified as false negatives and poorly educated as false positives.

2.1.3 - Explanations for social differences in CMD

Although it seems logical that the poorer should be less healthy than the rich people, the explanation for the findings is not straightforward. The issue of causal direction in the relation between social status and CMD has been a major concern in psychiatric epidemiology. While for some authors the responsibility for inequalities in CMD is located in the social structure determining differences in wealthy distribution [Power et al., 1991], an alternative explanation of the findings is that poor mental health determines social position. The relationship between low SES and CMD have been considered mainly in terms of two types of explanations: material circumstances or the social causation theory and social-selection.

Social causation

For the materialist/social causation theory, the determinants of social differences in CMD are expressed in class structure. Greater environmental adversity associated with a low social position cause CMD [Dorhenwend, 1990]. The harshness of poverty, long-term difficulties [Wheaton, 1978; Murphy, 1991], lack of social support, social discrimination, and the impossibility of personal achievement [Thoits, 1982; Harpham, 1994] have all been suggested as playing a crucial role in the development of psychiatric illness. Those at the bottom of the social hierarchy suffer the psychosocial effects of material and emotional deprivation [Wilkinson, 1996]. For Brown and colleagues [Brown and Harris, 1978], frequently referred to as key researchers in the field of social impacts on depression, differential exposure to stressful life events appears to explain, in part, socioeconomic

difference in the prevalence of depression. The effects of life events in Brown's work are highly dependent on the social context where they occur, this factor being of great importance in determining the onset of depression [Lewis, 1996]. Their work carried out in Camberwell, London, shows that working-class women were almost 50% more likely to have experienced a serious life event than middle-class women. The effects of long-term difficulties (chronic stressors) have been shown to be more harmful to mental health than the effect of acute stressful life events [Dressler, 1985; Creed, 1993] as they (life events) are often "the end result or focus of long-term difficulties or problems rather than discrete occurrences" [Brown and Harris, 1978, p.125].

Social-selection

For the alternative explanation, social-selection or the "drifter" theory, certain people drift down into or fail to rise out of lower SES groups because of premorbid personality traits or psychological impairment [Hofner and Welz, 1989]. Selection and drift are generally regarded as favouring emphasis on a genetic interpretation of cause [Dorhenwend, 1990].

There are different ways of testing the social selection hypothesis. One of them is to look at the temporal sequence of events through follow-up studies. Data collected in Britain from two cohorts of people who have been followed up since birth in 1946 and 1958 are able to relate early health to subsequent social mobility. In the 1946 cohort [Wadsworth, 1986], serious illness in childhood was shown to influence social mobility. In the 1958 cohort [Power et al., 1991], behavioural problems at age 16, assessed by teachers using the Rutter Behaviour Scale as a proxy for adolescent emotional well-being, was associated with social

mobility. In addition to an effect of behaviour on occupational social class, the reverse was also evident, that is, an effect of social class, based on the father's occupation on behaviour. Both cohorts found that poor health does effect social mobility but that the size of the effects is to small to account for very much of the overall health differences [Power et al., 1991; Wilkinson, 1996]. Furthermore, longitudinal research in Stirling County, Canada, indicated that there was a trend for prior depression to be associated with subsequent downward social mobility, but this trend was not statistically significant [Murphy et al., 1991].

Another way is to look at social differences in CMD among married women and children classified by their husband's or father's occupation [Wilkinson, 1996]. According to Wilkinson [1996] "it is reasonable safe to assume that although the `reference' occupation of husbands or fathers may be affected by their own health, it will be less affected by illness among their wives and children" [p.60]. Thus the social difference in depression found in Brown's study [Brown and Harris, 1978] among working-class married women classified according to their husband occupation, for example, are unlikely to be produced by selective mobility discriminating between the healthy and the less healthy.

Wilkinson [1996] is very strong in his arguments against `reverse causality' when writing about the possible effect of ill-health on income distribution:

> *"if the arrow of causality pointed in that direction, we would be obliged to say that health is one of the most important determinant of income distribution. Not only does this run counter to economic theory, but it flies in the face of commonsense notions of the influence on income distribution of employment and unemployment, profits, tax and benefits" [pp.81-82].*

2.2 - EMPLOYMENT STATUS

It is consistently found that the unemployed and their families have much poorer health when compared with those in work in industrialized societies [Warr, 1987; Townsend, 1988]. The adverse consequences of unemployment have been measured both in terms of mortality and morbidity and have been found to be particularly strong in studies of suicide and attempted suicide [Brenner, 1973; Platt, 1986; Platt and Kreitman, 1990; Pritchard, 1990]. These authors have drawn attention not only to the social problems resulting from unemployment but also to evidence suggesting a relationship between mortality rates and cycles of economic activity.

Unemployment has a social dimension, which can be characterised as a relationship with production. "You really cannot be unemployed unless you have to sell your labour in the market place. Therefore only those who work for a wage or salary can become unemployed... For this group of workers unemployment or the threat of unemployment is an assault on their social identity and wellbeing" [Colledge and Hainsworth, 1983, p.15]. Furthermore, social class and unemployment are related. The lower down the social scale the greater are the chances of becoming unemployed and the differences between skilled and unskilled workers is quite dramatic in terms of frequency of becoming unemployed. Using data from the United Kingdom National Training Survey, Narendranathan et al. [1982] concluded that sickness and unemployment were concentrated among those at the bottom of the occupational ladder. Bartley and Owen [1996], in a study to compare the rates of employment, unemployment and economic inactivity among those with and without limiting longstanding illness in different socioeconomic groups during economic change in

Britain in the period between 1973 and 1993, found that men in professional and managerial occupations had the highest employment rates and those in semiskilled and unskilled occupations the lowest. The difference increased over a time period in which overall rates of unemployment rose. Those in socioeconomic groups 1 (professional and managerial) and 2 (intermediate and juniors non-manual workers) experienced little decrease in their chances of being in paid employment while the fall in employment rates for those in the manual occupations without a limiting longstanding illness was more obvious. For those with a limiting longstanding illness, the employment rate was lower than for men without such an illness, though the fall in employment rates associated with illness was greater within the manual socioeconomic groups, leaving the authors to conclude that the "healthy worker effect" was less strong in non-manual than manual workers. On the other hand, the unemployment rates among manual workers with and without a longstanding illness were almost indistinguishable. Limiting longstanding illness was not strongly associated with unemployment but rather with economic inactivity (see next paragraph). Although a manual work with a chronic illness was less likely to be employed than a manual man without the illness, he was no more likely to be unemployed.

According to Morris and Cook [1991], in a high unemployment economy compared with one offering full employment, there will be more early retirement and an increase in the number of long-term unemployed. However, when jobs are scarce, long-term sickness may carry less of a stigma than long-term unemployment [Bartley and Owen, 1996]. In the Bartley and Owen study [1996] there was a rapid increase in the numbers of men economically inactive due to disability or permanent sickness and the rise in inactivity among manual workers with long-term illness, from 15% in 1979 to 38% in 1992, was far

greater than in the other socioeconomic groups.

Generally, economic growth is associated with increased employment but those less skilled, who were the first to lose their jobs, may return to a work situation with less status, seniority or income and there is also a possibility that their previous skills became redundant [Colledge,1982; Colledge and Hainsworth, 1983]. However, in Bartley and Owen study [1996], there was no sign of employment rates rising again among manual workers as the economy recovered.

Recently, self-employment has become an increasingly route out of unemployment [Bryson and White, 1996]. Yet very little is known about the consequences of this growth in self-employment to mental health and will be discussed further below.

Job security also tends to vary with changes in unemployment [Wilkinson, 1996] and this could increase the risk to workers who do not experience unemployment [Colledge and Hainsworth, 1983]. Smith [1994], found that even among middle classes in work, 35% were worried about the possibility of losing their jobs within 12 months, while 20% of families had recent experience of unemployment.

2.2.1 - Unemployment and CMD studies

The association between unemployment and psychological health have often been found in cross-sectional studies [Brown and Harris, 1978; Bebbington et al., 1981; Almeida-Filho, 1981; Bartley et al., 1992; Lima et al, 1996; Jenkins et al., 1997]. Longitudinal studies of individuals moving between employment and unemployment are becoming more common and have supported the causal impact of being involuntarily without a job, as presented below.

Longitudinal and factory closure studies

Warr and Jackson [1985], using the GHQ, reported that unemployed males of all ages in the U.K. who were unemployed for longer than 3 months showed higher CMD rates than those unemployed for shorter time periods. Re-employment was followed by a decrease in CMD rates. Psychological adaptation to long-term unemployment has also been investigated [Warr and Jackson, 1987] and a small but significant decline in mean score of the GHQ was found after an average of 25 months continuous unemployment. Adaptation was greater for those who had previously reported lower commitment to having a job, more contact outside their immediate family and for those at the extremes of the age range. Rodgers [1991] found a higher prevalence of CMD in unemployed men and women, in a national sample of over 3,000 36-year-olds in Scotland, England and Wales. This association was most striking in men of lower socioeconomic status, especially those not seeking work, and in women of higher occupational involvement. A Finnish study [Lahelma, 1992] of men and women aged 25 to 49 years who were originally employed in industry found a strong association

between unemployment and GHQ scores, even after adjustment for the effects of age, financial status, social support, marital status, dependent children, diagnosed disease, vocational education, occupational class, duration of unemployment, unemployment rate and branch of industry. This association was stronger among men than among women and re-employment was followed by an improvement in mental well-being. On the other hand, no statistically significant association was found between unemployment and the incidence and maintenance of CMD, using the CIS-R, in a prospective cohort study of consecutive primary care attenders in south London [Weich et al., 1997].

Factory closure studies, causing unselective unemployment, have provided experimental opportunities for examining the effect of redundancy on CMD. The threat of redundancy increased GHQ scores in a study of Londoner journalists carried out to investigate how the prevalence of CMD altered once redundancy occurred [Jenkins et al.,1982]. On knowing that their jobs were no longer under threat the prevalence of CMD cases decreased significantly from 37% to 24%. Withington and Wybrow [1988], in a study to examine the effect of a shipyard closure on subsequent employment, finances, mental health and well-being in Middlesbrough, England, found a strong relationship between GHQ scores and current employment status after closure has occurred. Re-employment was followed by lower rates of CMD. Self-reported health status tended to deteriorate among middle aged londoner males civil servants anticipating job change and unemployment, though the picture was less consistent for females [Ferrie et al., 1995]. This decline was not followed by a consistent worsening in the profile of health related behaviours. There was an increase, although non-significant, in the rates of CMD and the preliminary results from the in depth study indicated that the anticipation period was experienced as a time of great stress and

anxiety by most of the workforce.

An increasing number of studies have been carried out, pointing towards a consistent relationship between youth unemployment and CMD. Banks and Jackson [1982], using the GHQ-12, examined two cohorts of 16-year-old in their last year of school and during the subsequent two years in Leeds, England. Those who became unemployed were found to have increased their rates of CMD, while there was a decrease in those who moved into jobs. Using prospective data, Hammarström et al. [1988], showed that unemployment increased psychological and psychosomatic symptoms, decreased social activities in clubs, increased alcohol and narcotics abuse and utilisation of health care services in young men and women in an industrial Sweden town, where unemployment was endemic for a long time. The effect of unemployment was different among girls and boys. Girls were more exposed to unemployment and unemployment also brought more negative effects to them. The findings from the Australian Longitudinal Survey showed that employed youth reported significantly lower CMD, measured by the GHQ, than students and unemployed [Graetz, 1993]. However the highest levels of CMD were for dissatisfied workers and the author concluded that what happens in the workplace is at least as important as success or failure in finding and keeping a job. Using the same data, Morrell et al. [1994] reported a relative risk of 1.5 (95% CI 1.15-1.99) of becoming a CMD case as a consequence of unemployment and of 1.63 (95% CI 1.08-2.48) of recovering after re-employment.

Women and spouses

Men and women play different and changing roles in society and therefore tend to have different needs [Moser, 1993]. Women are more at risk of unemployment and underemployment [Hammarström et al.,1988; Kassarda and Parnell, 1993] and are more frequently working in the informal sector of the economy in Third World countries [Machado, 1991]. In industrialized countries, research on women has concentrated on the effect of paid job outside the home on mental health and has focused on one or other of two competing explanatory models: the `role enhancement' and the `role overload' [Power et al, 1991; Bartley et al., 1992; Macran, 1993] comparing paid workers to housewives. It has been more problematic to investigate the effects of unemployment on mental health in women because married women not in a paid job are generally classified as housewives rather than unemployed [Power et al., 1991]. Brown and Harris [1978], concluded that having job outside the home protected working-class women with young children from the depressive effects of life-events. Warr and Parry [1982] found lower rates of depressive mood for those in paid work in a sample of working class women. Kandel et al. [1985], found the lowest rate of depressive symptoms in women who were both married and working and the highest level in those who were neither married nor working. For Aneshensel [1986] it is worse for a woman's mental health to have no job than to have a high strain job, especially if the marriage is high-strain. Thoits [1987], reviewing the literature, found that employed married mothers showed higher levels of distress and ill-health than their male counterparts in all studies and in seven of the 12 she reviewed they showed levels similar to those in women without paid work. Bartley et al. [1992], using data from The Health and Lifestyle survey in England, Wales and Scotland, found that women

with full and part-time paid work were more likely to experience lower levels of psychological symptoms than housewives. Part-time job was more advantageous than full-time and the benefit was greater in terms of psychological than physical well-being. There was some evidence of an interaction between employment status and women's own occupation and paid work was associated with better mental health in women in manual occupational groups, but absent in those in managerial and professional occupations.

Spouse's employment status has also been shown a risk factor for CMD. Job loss for men had detrimental effects on their wives' mental health, but there was no equivalent elevation for men [Cochrane and Stopes-Roe, 1981; Bebbington et al., 1981; Rodgers, 1991].

Brazilian studies

The studies reviewed above have focused on the experience of relatively affluent countries, where welfare provisions are securely in place. The situation in the developing world is frequently different. The urban reserve army of labour is formed less by unemployed than by underemployed people working outside the realm of formal employment [Singer, 1983]. Informal work has been regarded as a typical feature of Latin American countries [Guimarães and Souza, 1984; Oliveira and Roberts, 1996] and is a major feature of labour placement discrimination that targets migrants [Singer, 1983], women [Machado, 1991] and is a common step for entrance into the labour market among young individuals. Informal workers are a heterogenous group of non-formally hired employees and independent workers (self-employed) who form an underprivileged category for whom there is no protection by labour or social regulations. Almeida-Filho [1982, p.115] defined

displacement as "the absence or defective relationship of the worker with the formal labour market...displaced workers are not actually put outside the productive system, but rather, as part of a reserve army of labour, they perform an important role in the maintenance of the capitalist evolutionary trend in dependent social formations". In a study of the labour force in Salvador, northeast Brazil, he found that displaced individuals showed higher levels of CMD, assessed by the QMPA, than placed ones, even when the effects of age, marital status and education were considered simultaneously [Almeida-Filho, 1981]. The findings from a cross-sectional study carried out in a poor urban area in Salvador [Santana et al., in press] showed that the prevalence ratio for being a case of CMD, assessed by the QMPA, in informal worker women was 1.97 compared to those in formal jobs. Loss of employment was associated with CMD, assessed by the SRQ-20, in a cross-sectional study of stressful life events conducted in Pelotas, southern Brazil [Lima et al., 1996]

2.2.2 - Explanations for the association between unemployment and CMD

The link between unemployment and CMD is not yet fully understood and contradictory explanations have been presented on the effects of unemployment on mental health. It is a complex association and according to some authors [Warr, 1987; Graetz, 1993; Ezzy, 1993], unemployment can have positive and employment can have negative effects on someone's mental health.

The experience of unemployment differs considerably depending on a variety of factors including gender, age, income, social support, reasons for job loss, commitment to employment, satisfaction with previous work, working conditions, expectation of returning

to work, length of unemployment and social class. The unemployed during the times of low unemployment rates tended to be more stigmatized and accused of being victims of their own situation. Unemployment tends to be individualized and isolated from their social roots. As the number of individuals involved becomes progressively larger, typically during economic downturns, the unemployed become less deviant and unemployment is often attributed to structural causes [Platt and Kreitman, 1990; Lahelma, 1992; Ezzy, 1993]

Unemployment: cause or effect of CMD

For some authors [Tiffany et al., 1970] personal attributes impede job-getting and the greater proportion of unemployed are unemployed for psychological reasons. Selection certainly plays a role among the unemployed [Lahelma, 1992]. No one would deny that pre-existing health status can be an important factor in determining the ones to find and keep a job and those in better health may be selected into paid work [Bartley et al., 1992]. However, the direction of the effect, especially the re-employment effect, is now reasonably clear [Ezzy, 1993]. Although cross-sectional studies cannot decide about the causal impact of unemployment itself, longitudinal and especially factory closure studies, have provided strong evidence that "unemployment is a major contributor to the mental ill-health observed among the jobless" [Lahelma, 1992; p.270].

The stages model

Some authors concentrate on the career of the unemployed individual and developed a model to explain the stages of psychological transition that occur in attempting to adjust to a

life without job. The psychological impact of unemployment on the individual and their families was explained by Hill [1978], on the basis of a large British survey of unemployed youth, in terms of 3 stages the unemployed move through. First the individual (unemployed) feel disbelief, but maintains a degree of optimism, regarding the fact of job loss as temporary. However, the optimism soon runs out and the next stage is one of pessimism, finances are short, they are caught in the web of market forces which leads to an inability to act. This stage is called as `unemployed identity'. Moving to the third stage, time loses its importance for the individual and the idea of being unemployed rather than worker is internalized. This model is largely descriptive, the operational variable being length of unemployment, and treats the unemployed as a homogeneous group [Ezzy, 1993].

Jahoda's functional model

Jahoda's functional model is based on the assumption that being unemployed deprives an individual of various beneficial by-products typically gained from employment. These include obvious benefits due to remuneration, a manifest function of employment, and five latent functions of employment such as time structure to the day, contacts with people outside the family, links to goal and purposes that transcend their owns, personal status and identity and enforces activity. For the author [Jahoda, 1988; p.17]., which "all those who lost jobs have in common is the abrupt exclusion from a social institution that had previously dominated their lives". Based on Freud's dictum that `work binds people to reality', the five latent consequences identified by Jahoda can be seen as an elaboration of how work ties the person to reality. This model has been criticized by Fryer [1986] and Ezzy [1993] for not taking into account the individual meaning people attribute to being

unemployed (psychological dimension of unemployment), and by Ezzy [1993] for ignoring the differences in the experiences at work.

Warr's vitamin model

Warr's [1987] model is based on an identification of nine features that are considered as `vitamins' for mental health in all kinds of environment, but particularly paid work and unemployment. These include: 1) opportunity for control; 2) opportunity for skill use; 3) externally generated goals; 4) variety; 5) environmental clarity; 6) availability of money; 7) physical security; 8) opportunity for interpersonal contact and 9) valued social position. According to this author, the association between the environmental features and mental health is non-linear. In all cases, low levels of an environment feature tend towards an impairment in mental health, but increases beyond a required level do not yield further benefit and certain vitamins become harmful in very large quantities (features number 1, 2, 3, 4, 5 and 8). This approach is `situation-centred' in that the environment is the primary object of investigation, but includes the assumption that people can mould environmental influences in differing ways. The unemployed person's environment is typically one which contains only limited amounts of each feature. Lack of opportunity for control and financial deterioration due to unemployment are viewed as the greatest source of personal and family problems and are likely to influence the other environmental features.

The vitamin model can account for the observed positive effects of leaving oppressive work, the negative effects of becoming employed in dissatisfying work, the increase in affective well-being for those who regain a job and can also explain the differences in mental health amongst subgroups of unemployed. For example, unemployment for unmarried women,

who are usually principal wage-earners, results in much greater problems with availability of money, security, opportunity for personal contacts and valued social position than does unemployment for those married, who are relatively less dependent on work for adequate levels of some environmental features.

Job loss as a status passage

Ezzy [1993], using a sociological approach, consider unemployment as a `divestment passage'. `Divestment passages', a type of `status passage' (social transition or the movement into a different part of a social structure) "emphasise separation from a status and often contain extended transitional phases of uncertain duration... and are, in one sense, negatively achieved [Ezzy, 1993; p. 49]. Stressing the importance of understanding the point of view of the actor, it is the meaning given by an individual to the work role to sustain consistent and positive self-images that shapes the effects of unemployment on mental health. It is the failure or success in the attempt to maintain a meaningful life that has a direct impact on the psychological well-being.

2.3 - MIGRATION

Urbanization has been recognized as one of the most important social changes taking place at global level [Harpham, 1994]. "Urban settlements were first established more than five thousands years ago, but as recently as 1900 only one in eight people lived in urban areas" [Gilbert and Gugler, 1992, p.v]. Global urbanization began with the industrial revolution. The spatial agglomeration, a technical requirement for industrial production, motivated the transfer of activities from rural to urban areas [Singer, 1983]. While total world population increased 2.5 times between 1800 and 1950, world urban population increased by 20 times [Santos, 1989].

Back in the late '20s and '30s, city life *per se* was said to produce psychiatric symptoms. This assumption considered modernization as a source of personal stress and rested on two premises: 1) urbanization and industrialization breed social disorganization and 2) the daily life of the traditional village is *inherently* healthier, from a psychological point of view, than almost anything those village residents might encounter in any urban industrial setting elsewhere. For the Chicago urban sociology movement, the impersonality of urban life, its plethora of stimuli, its frenzied pace and its crowded conditions "creates disease and vices which tend to destroy the community" [quoted in Inkeles and Smith, 1970, p.82]. In a romantic view of the world, development, for these theorists, was regressive and city life was bringing reduced freedom and destruction of humanity.

2.3.1 - Determinants and consequences of rural-to-urban migration in Brazil

While in developed countries there is a tendency for the urban population to decrease, less developed countries can be characterized by high levels of urban population and high rates of population growth [Santos, 1989]. In developed countries urbanization is an old process and one that took place slowly following the rhythm of technological revolutions. Urbanization in developing countries is more recent and has taken place rapidly within a completely different economic and political context [Santos, 1989; Oliveira and Roberts, 1996]. It is difficult to generalize about urbanization in the Third World. Each nation has its own unique mix of economic, social, political, ecological and demographic characteristics which influence the form that urbanization takes [Ekblad, 1990]. The literature on Latin American urbanization overlaps with that on the determinants of internal migration as in this continent a large part of the urban population growth was due to migration from rural and smaller urban places to larger ones as shown in Table 2.1 [Santos, 1989; Oliveira and Roberts, 1996]. According to Singer [1983], urbanization is a social process seen as part of the on-going structural transformation in society and rural-to-urban migration is related to individual's social class. The structural transformation forces certain social groups to move from rural to urban areas. Only at a second stage will individual and objective conditions determine which members from this social class will move first and who will be left behind.

Table 2.1 - *Impact of migration on the Latin America urban population growth 1940 to 1980*

Places	Periods	% due to migration
Venezuela	1940-55	71
Colombia	1940-55	70
	1951-64	36.6
El Salvador	1940-55	54
Mexico	1940-55	42
	1960-70	31.7
Cuba	1940-55	26
Brazil	**1940-55**	**49**
	1950-60	**49.6**
	1960-70	**44.9**
Argentina	1947-60	50.8
Chile	1952-60	36.6
	1960-70	37.4
Peru	1961-72	41.6
Rio de Janeiro	**1940-50**	**70**
Santiago	1940-50	45
Buenos Aires	1940-80	20

Source: Santos, 1989; Oliveira and Roberts, 1996.

Urbanization thus involves both `social drift' and `social residue', which may explain some of the intra-urban differences in the prevalence of mental-ill health. According to Ekblad [1990],

> *"Social drift is a tendency for people with particular characteristics to move to particular areas and social residue is the tendency for people with particular characteristics to be left behind when the better adjusted members of the population move out" [p.119].*

The relative power of these factors may depend on whether migrants are primarily pushed (perhaps due to impoverished rural areas) or pulled (by realistic aspirations of acquiring better jobs in urban areas). Two main ideas are recurrent: forces at the area of origin driving people out and forces at the areas of destination attracting people to the city. This is known as the `push and pull effect' [Santos, 1989]. Although, for some authors [Singer, 1983; Santos, 1989], the movement from rural areas has been always a violent process and a consequence of two `expulsion factors' [Singer, 1983]: `change factors' and `stagnation factors'. The introduction of technology and development in the rural areas - `change factors' - generates an increase in productivity and in specialization of agrarian labour and as a consequence a reduction in the level of employment in the rural area (technical unemployment). Technical unemployment promotes a massive flow of migration and, as a consequence, may reduce the absolute number of inhabitants in the rural areas. There is an indirect relationship between the volume of labour force freed from agriculture and the demand for urban production. These `change factors' have been significant in central and south regions of Brazil, for example [Singer, 1983]. On the other hand, the reduction of land available to individuals due to the growth rate of the population associated with either reserves of arable land or the monopoly of big properties - `stagnation factors' - drives out part of the population. The absolute number of inhabitants in the rural areas remains the same or slowly grows. `Stagnation factors' have been significant in northeast Brazil [Singer, 1983]. In contrast, `pull' urbanization is a situation where people are attracted to the cities because of the greater opportunities for education, good medical care, better paid jobs, better careers, higher standard of living, etc.

In the city migrants can be placed in or displaced from the formal labour market and, in the case of displacement, this enlarges the urban reserve army of labour. The migrant's place in

the urban social structure is, in most cases, predetermined by his/her previous class position, education level, kinship links, etc. In Brazil, because of the massive transfer of labour from agriculture to urban jobs, the period from 1940 to 1980 have been years of a high rates of occupational mobility from agricultural to non agricultural jobs and from manual to non-manual ones [Durston, 1986; CEPAL, 1989]. The majority of migrants were not incorporated by the economic market and they reproduce in the cities certain features of a subsistence economy being involved in activities such as service-sellers, street-vendors and domestic workers [Singer, 1983, Gilbert and Gugler, 1992]. On the other hand the proletarianization of the migrants expanded the working class in the cities, increased the non-qualified labour force and reduced bargaining power resulting in low salaries and poor working conditions. In the 1980-91 decade, the pattern of urbanization in the country, previously characterized by population concentration in bigger cities, changed considerably. There was a decline in the urban population growth from 4.9% p.a. between 1970-80 to 2.6% p.a. and also in the growth rates of metropolitan centres[6] with an increasing significance of intermediate cities [Martine, 1994; Oliveira and Roberts, 1996].

Singer [1983] pointed out that only urban development expands the urban economy which will be able to incorporate the migrant labour force.

6 Metropolitan region in Brazil is defined as a group of neighbour cities, one of them having a large population(usually) more than 500 000 inhabitants) and the other being economically and socially integrated with the former, their urban growth depending mainly on their distance from the nuclear city.

2.3.2 - Migration and CMD studies

Latin American studies

In Latin America, since early '60s, geographical mobility has been of particular interest to researchers studying social change and CMD. Despite the number of studies related to the subject, the association between migration and CMD remains controversial. According to Almeida-Filho et al. [1994], after the pioneer study carried out in Lima, Peru [Caravedo et al., 1963] "the controversy grew and almost came to dominate social epidemiological research in the continent" [p.41]. However, a careful evaluation of the methodological features of these studies shows that they have been largely descriptive and fail to examine causal association in any depth. Two particular weaknesses have been the timing of migration in relation to the onset of CMD and secondly, the contribution of potential confounding variables has not been systematically studied.

The Peruvian studies [Caravedo et al., 1963; Ponce, 1970] found that psychosomatic disorder [Caravedo et al., 1963], anxiety, stress [Ponce, 1970] and depression [Caravedo et al., 1963 and Ponce, 1970] were more prevalent among mountain (`indigenous') and rural peasants who had migrated to the city. Though, in Ponce's study [1970], the `reactions of maladaptation' were higher amongst those at the lower end of the socioeconomic hierarchy, suggesting an interaction between migration and SES. Inkeles and Smith [1970], in the `Harvard Project' which tested the theory concerning psycho-social modernity in six developing countries (including two Latin American: Argentina and Chile, along with India, Israel, Nigeria and Pakistan), using the Psychosomatic Symptoms Test to measure

psychological adaptation, conclude that urban experience, education, factory work, mass media contact, and individual modernity were not regularly associated with increased psychological distress. Particularly related to migration, these authors stated that "moving in itself seems to be neither here nor there with regard to psychic health" [p.106]. The Cali (Colombia) study [Micklin and Leon, 1978] indicates that migration was associated with higher rates of CMD, measured by a Spanish translation of Langner's twenty-two items scale. Higher scores were found for individuals of rural origin, whereas those from large urban areas presented the lowest scores. This association was eliminated after adjustment for life-cycle stage and type of migration, gender, age and educational level.

Brazilian studies

Although in general, Latin American studies of migration and CMD have been inconclusive, the Brazilian findings have, with one exception [Almeida-Filho and Bastos, 1982], dismissed any independent effect of migration on CMD, as presented below.

Santana [1982], using the QMPA in Salvador, Bahia, Northeast Brazil, found higher prevalence of CMD in migrants (22%) than in non-migrants (18%), though this association was not statistically significant. Almeida-Filho [1982], using the same data, after adjusting for the effects of age, marital status and education, dismissed migration as a risk factor for CMD and concluded that "the migration process itself or acculturation phenomena related to it do not seem to be associated with mental illness health process in the social setting of Bahia" [p.115]. However, the results of his case-control study [Almeida-Filho and Bastos, 1982] showed that migrant women had a risk nearly six times higher than that of non-migrants of being diagnosed as depressive, even when the effect of gender, age, occupation,

educational and marital status were considered simultaneously. Reichenheim and Harpham [1991], using the SRQ-20 with mothers of children under 5 in a case study of maternal mental health in a large squatter settlement in Rio de Janeiro (Rocinha), Rio de Janeiro, southeast Brazil, also found no association between CMD and migration. Nevertheless, the prevalence tended to increase with length of residence in the squatter settlement for mothers in the low-income groups, whereas it tended to decrease in the highest income group. A case-control study was carried out nested in the Brazilian Multicentric Study, in three urban centres: Brasília, São Paulo and Porto Alegre [Coutinho et al., 1996]. They found that any association between migration and CMD completely disappeared after controlling for gender, age, marital status, education and place of residence. When women were analyzed separately, the association between migration and CMD was not present in housewives and in women in paid jobs, but was present and statistically significant among unemployed women, suggesting an interaction between migration and employment status. No association was found between migration and CMD in a population-based survey conducted in Pelotas, Rio Grande do Sul, southern Brazil [Lima et al., 1996].

2.3.3 - Explanations for the association between migration and CMD.

It is generally acknowledged that migration is associated with changes in occupational roles, education, language use, family structure and social networks [Gaviria et al., 1986]. However, few models are present in the literature to explain the mechanisms whereby the changes in people's ways of life resulting from migration lead to CMD.

Cultural change

In the first model, cultural change[7] , as a consequence of the migration process from a traditional rural context to a modern industrial society, is proposed as the immediate determinant of psychological disturbance [Seguin, 1956; Cassel et al., 1960; Caravedo et al., 1963; Ponce, 1970]. This approach assumes that the basic difference is between two cultural systems - rural and urban - and the movement from one cultural setting (rural) to another (urban) is highly stressful. It explains migration by the actors' motivation, i.e., from the migrants' perspective alone. Therefore, his/her insertion in the social structure is ignored, which is misleading in that it disguises conflicting practices of social groups within an economic system.

Stressful life event

In the second, migration is regarded as one among several other stressful life events, such as divorce, illness of relatives and robbery, that can generate CMD [Cook, 1987]. This model

[7] Referred to as cultural shock, loss of culture, acculturative stress, marginalization.

tends to consider migration as a homogeneous experience [Coutinho et al., 1996]. As highlighted before in this chapter, life events are not independent of the context in which they occur [Lewis, 1996; Coutinho et al., 1996].

Economic displacement

Finally, stress can be considered a consequence of changes in the economic system, which expels labour without providing sufficient new employment for the full reincorporation of these groups within a modern productive arena. Urbanization is seen as part of the on-going process of structural transformation in society, including shifts in the social relations of economic productions. Migration is considered a collective process of exclusion from a cultural, socio and political space [Singer 1983]. Almeida-Filho [1981], suggested that

> *"the fundamental process that should be taken into account in such research is the formation of an urban labour force and a reserve industrial army, essential conditions for the dependent capitalist development in 'Third World' social formations" [Almeida-Filho, 1982, p.115].*

and Inkeles and Smith [1970], concluded that

> *"perhaps the critical factor is whether or not your post-migratory status permits you to become integrated into a stable, meaningful, and rewarding role in your new environment" [p.106] and considered "the unemployed in cities as the only ones doomed to psychic distress" [p.111].*

2.4 - SUMMARY OF LITERATURE REVIEW AND JUSTIFICATION OF THE STUDY

The literature review has sought to answer the following questions:

1 - Why consider CMD?

Anxiety and depression are common causes of morbidity in both developed and developing countries. CMD are disabling, leading to a considerable use of health services and are an important cause of days lost from work. Not only do CMD create a burden on health services, but they also impact on society as whole. Therefore, they are a significant public health problem. Improved diagnostic systems have made the detection of CMD easier and treatment are relatively cheap. Despite of that in Brazil, CMD continues to be neglected in terms of problem measurement and policy formulation. In Pernambuco, until now no population-based epidemiological study has been undertaken. The lack of information on CMD suggests that descriptive studies are needed to generate further research hypotheses.

2 - Why focus on social differences?

Living in an urban area does not mean `development' for many of the Brazilian people. The majority of them live in poverty characterized by household and neighbourhood deprivation and in circumstances of extreme social and economic stress, with huge differences between social groups. Education and social skills, employment, wealth and income, housing and environment, are unequally divided in the Brazilian society, so predictably, CMD show pronounced social inequalities. Confronting inequalities in CMD through a description and preliminary explanations is an important step if any attempts are to be made to improve the plight of those worst off.

3 - How to measure social class differences in CMD?

The association between social class and CMD has been the object of numerous studies in different societies. However, the results obtained so far have been conflicting. The controversy over findings reflects methodological variation of psychological instruments and an oversimplification of what is meant by social class. The analysis of ill-health in the economic, political and ideological context of a society implies the development of a conceptual framework rooted in the social sciences [Laurell, 1989]. Social class, a theoretical concept with broader explicative power, determines different access to education, employment, material standards of living, lifestyles and working conditions. These outcomes are in turn the proximate determinants of ill-health [Possas, 1989] and must be considered together to better understanding social class differences in CMD. Though little would be achieved without radical changes to social organization, the search for specific links may lead to public health benefits since they are more amenable to changes in economic and social policy.

4 - Why consider a low income population?

The northeast of Brazil has a disproportionate share of Brazilian poverty. Low-income population is not a homogeneous group. Among them, there is a difference between those with some degree of choice over where to locate and those with virtually no choice who are severely constrained by their environment. Differences in CMD rates on a large scale have been demonstrated in developed countries, but data are lacking in developing countries. There are many possible intermediaries between social class and CMD and they may vary across culture [Marmot et al., 1987]. Therefore, looking within a poor area, which represents

the majority of northeastern population, might highlight specific links between social class and CMD.

5 - Does rural-to-urban migration increase CMD in urban areas?

Brazil has experienced a great rural-to-urban transition. Most migrants went to poor urban areas. Accompanying the explosive growth of large cities has been a plethora of problems. These include among others, high rates of unemployment and underemployment as urban labour markets were unable to absorb the expanding numbers of job seekers, soaring urban poverty, insufficient shelter, inadequate sanitation, serious air pollution and municipal budget crises.

Despite the number of studies carried out in Latin America, particularly in Brazil, the causal relationship between migration and CMD remains controversial. The effect of migration on CMD, if it exists, may for example, be related to factors prior to migration, to selection of who migrates and to the experience of migration and settling.

6 - What were the consequences of the growth in unemployment and informal work to the mental health of the Brazilians?

Unemployment has been acknowledged as an important determinant of CMD. Most studies have focused on the experience of relatively affluent countries, where welfare provision is securely in place. Perhaps the most significant difference between employment status in developed and developing world has to do with the high proportion of people working outside the realm of formal labour market. Though informal work has been regarded as a typical feature of Latin American countries, very little is known about the psychological health of informal workers.

2.5 - OBJECTIVES OF THE STUDY

The aim of this study is to investigate the specific links between social class and CMD in developing countries and to integrate them in a hierarchical framework.

Specific Objectives:

1. To analyze the association between socioeconomic status and CMD.

2. To investigate which of the various intermediaries of social class are most strongly associated with CMD in the adult population living in a low income area of Olinda, in the state of Pernambuco, Northeast Brazil.

3. To measure whether there is an association between unemployment, informal work and CMD, after adjusting for potential confounders.

4. To determine whether the prevalence of CMD is different in migrants and non-migrants living in urban settings, after adjusting for potential confounders.

5. To assess the effect of gender, age, socioeconomic status, employment and migration on misclassification by the SRQ-20 compared to a psychiatric interview.

CHAPTER 3 - METHODS

This chapter describes the methodological approach adopted for developing this thesis. It covers in detail the study design, method for sample size calculation, fieldwork procedures, data management and analysis.

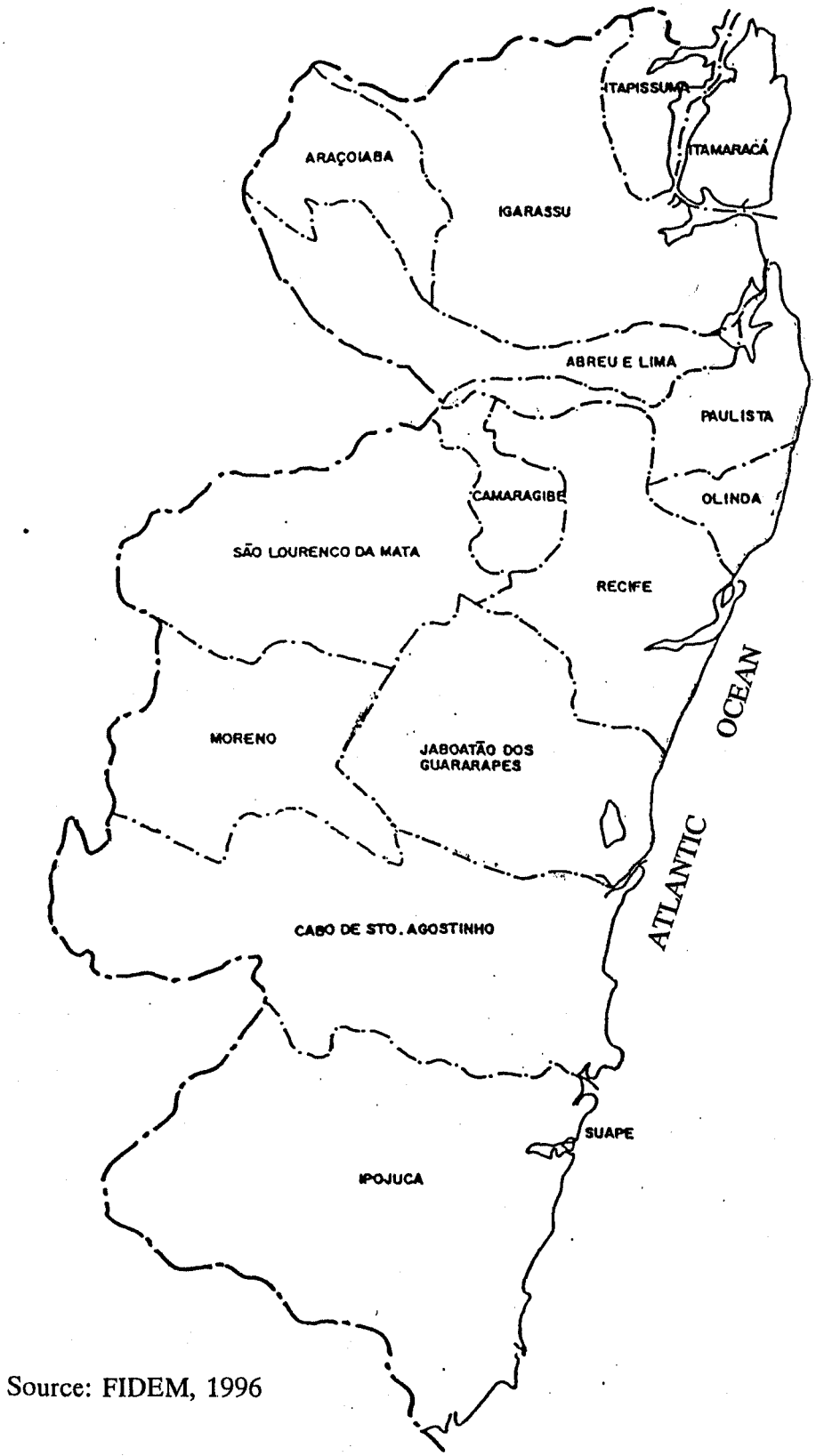
3.1. OLINDA - THE STUDY SITE

Olinda is located in the tropical rain forest region along the coast of Pernambuco state in Northeast Brazil. It belongs to the Recife Metropolitan Region (RMR - Figure 3.1)[1]. The Region occupies 2.82% of the total area of the state of Pernambuco but contains 41% of the state population (2,919,979 inhabitants) [Fundação Instituto Brasileiro de Geografia e Estatística - IBGE, 1991a]. Recife with a large harbour, surrounded by one of the major sugar cane plantations of the time, was the most important northeastern urban centre in the

[1] The metropolitan area of Recife covers about 2,238 km^2 and contains the following neighbourhoods: Itapissuma, Itamaracá, Igarassu, Araçoiaba, Abreu e Lima, Paulista, Olinda, Recife, Jaboatão dos Guararapes, Camaragibe, São Lourenço da Mata, Moreno, Cabo de Santo Agostinho and Ipojuca [FIDEM, 1996].

17th century [Fundação de Desenvolvimento da Região Metropolitana do Recife - FIDEM, 1990]. During the 19th century Recife still played an important role in the Brazilian economic system, which had just strengthened its dependence character by isolating the industries in the southeast and encouraging an export-oriented agrarian production in the northeast. Since then, the city has been losing its importance in the regional and national scenario. Between 1960 and 1970, following the concession of fiscal incentives to the industrial projects in the northeast, Recife received the largest migratory contingent and its population was growing at an annual rate of 3.9% [Banco do Nordeste Brasileiro - BNB, 1975]. The majority of immigrants were female and came from within the state or other states of the northeast. Their males counterparts tended to migrate further in Brazil, mainly to the southeast [BNB, 1975]. The growth pattern of the RMR has been changing in recent decades. It has declined to a rate of 2.7% between 1970/80 and 1.8% between 1980/91. In the last decade, with the exception of the metropolitan region of Rio de Janeiro, it had the lowest growth rate among all the Brazilian metropolitan regions [FIDEM, 1996]. The rates of migration to the RMR have slowed from 8.0% between 1960/70 to 4.2% per annum between 1970 and 1980 [FIDEM, 1990]. Recently, the RMR has been facing the highest unemployment rate in the country - 9.8% [IBGE, 1993] and 42% of the economically active population was working outside the formal labour market in 1995 [FIDEM, 1996]. In 1994, Recife was classified by the Population Crisis Committee as the most deteriorated city in Brazil [FIDEM, 1995]. Recife, Olinda, Jaboatão dos Guararapes, Paulista and Camaragibe form an `urban continuum' and represent 83.5% of the RMR population. Recife and Olinda constitute the central core and represent 56% of the RMR total population [FIDEM, 1996].

FIGURE 3.1 - RECIFE METROPOLITAN REGION



Source: FIDEM, 1996

According to the 1991 Demographic Census [IBGE, 1991a] Olinda (Figures 3.2 and 3.3) had a population of approximately 341,394 inhabitants. It consists of only 37.4 square kilometres but has a very high demographic density, 9,128 inhabitants per square kilometre. Since the 1960s Olinda has experienced a rapid growth in its population. This has resulted from rural-to-urban migration into the RMR and government construction of housings and apartment buildings which were available for purchase to low and middle-income families (Figure 3.4). The urban area advanced into peripheral settlements which lacked basic facilities and were occupied by less privileged, low income groups. Self-construction of flimsy houses on whatever land was available and affordable often represented the only way of realising the dream of owning a home (Figure 3.5). Olinda's population growth has not been accompanied by development in employment provision. For this reason, Olinda, situated only 8 Km from Recife, has been described as a twin city of the capital forming part of an urban continuum as if it were a giant district with the majority of Olinda's residents working in Recife. Because of this, Olinda is known as a `dormitory city'. The majority of Olinda's inhabitants (98.5%) live in urban areas. The urban area is composed of 86,137 residential households with a mean of 4.38 inhabitants per household. By the end of the 1980s, 33% of the population was living in 47 shanty towns (favelas) around the city [Secretaria de Planejamento de Olinda, 1988]. In the last census [IBGE, 1991a], men represented 47% of Olinda's population and women 53% and 32% of Olinda's population was under 15 years old. The tertiary sector (leisure, tourism, commercial sales and selling of services) represents 73% of the economic activity in the city and 51% of the economically active population earned up to two national minimum wage - which averages £47 per month - and only 6% received more then ten minimum wages monthly [IBGE, 1991a]. The illiteracy was 20% in the population over five years. Only 29% and 90.2% of the population

had sanitary facilities and water supply respectively. There is an unknown number of individuals' septic tanks which are draining sewage directly into rivers, channels and streams. In 1990, 31% of deaths were from circulatory system diseases (stroke, coronary heart disease and high blood pressure) representing the first cause of death while external causes (homicides, suicides, traffic accidents) represented 15% and infectious diseases 14% [Secretaria de Saúde de Olinda, 1993].

Olinda is divided into five administrative areas (Figure 3.2) representing 27%, 30%, 14%, 14% and 14% respectively of the population. The areas present a high degree of social and epidemiological heterogeneity [Secretaria de Saúde de Olinda, 1993]. Area II is the most populated with 103,100 inhabitants, 61% of them above 15 years of age. Area II is formed by the following neighbourhoods: Peixinhos, COHAB Peixinhos, Jardim Brasil I, Jardim Brasil II, Vila Popular, Sítio Novo and Salgadinho.

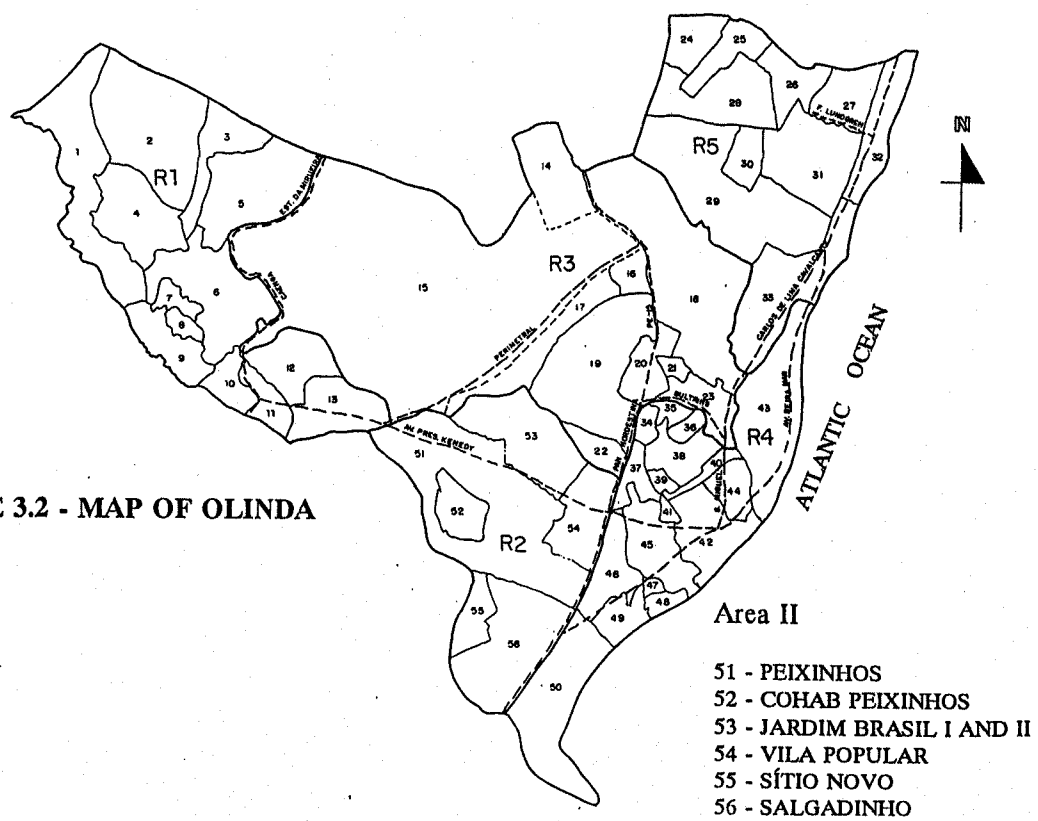
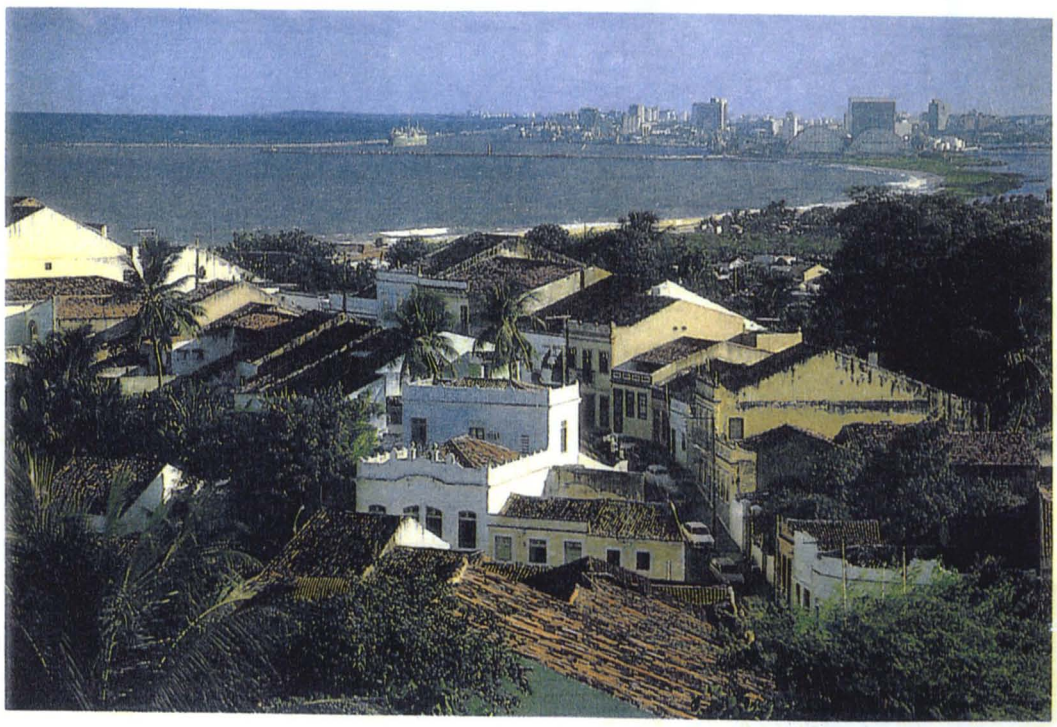


FIGURE 3.2 - MAP OF OLINDA

FIGURE 3.3 - AERIAL VIEW OF OLINDA

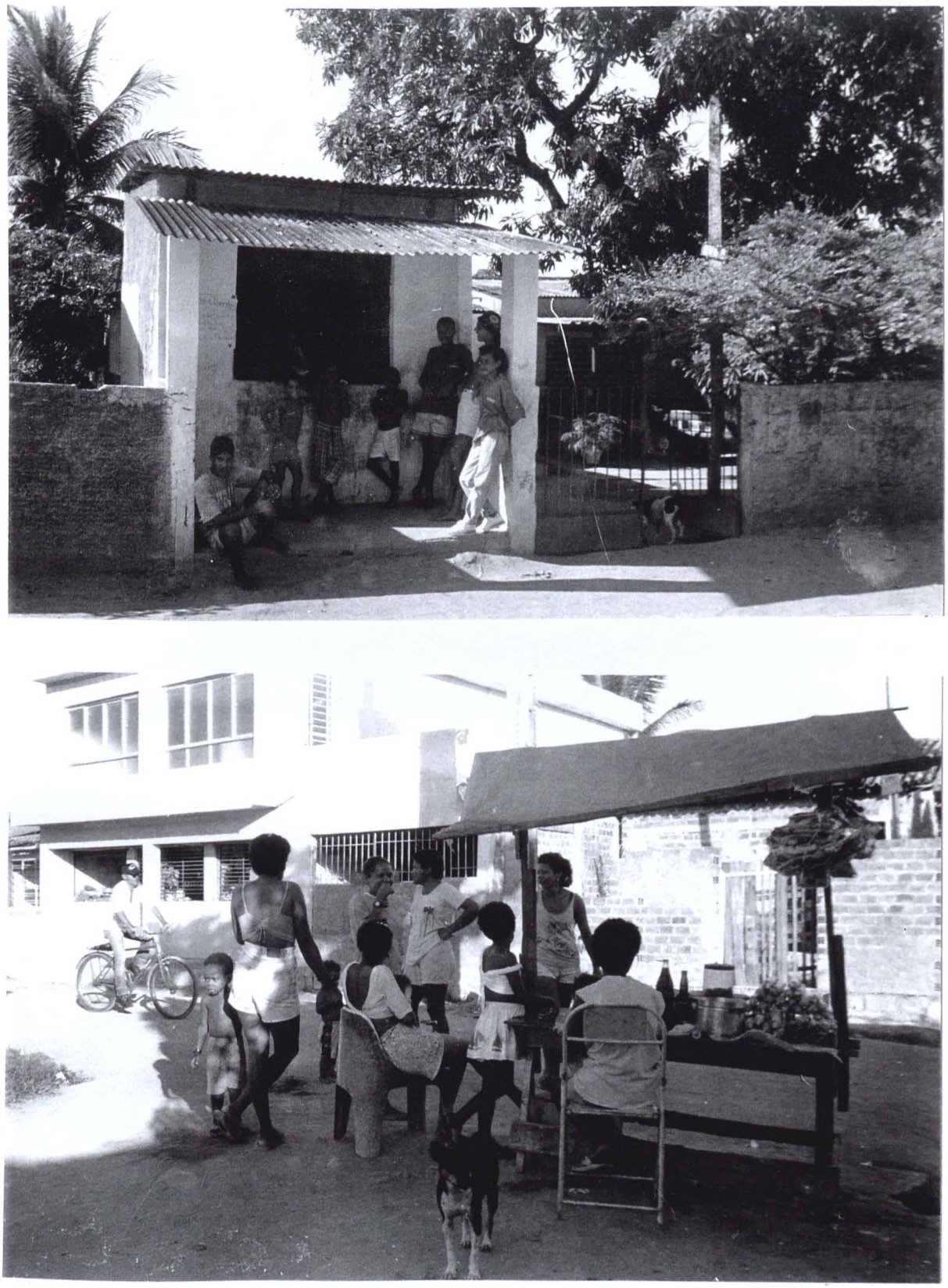


The colonial buildings of Olinda represent the formal wealth from sugar plantation

FIGURE 3.4 - LOW-INCOME APARTMENT BUILDINGS IN JARDIM BRASIL

FIGURE 3.5 - SELF-CONSTRUCTED HOUSES IN PEIXINHOS

FIGURE 3.6 - INFORMAL WORKERS IN AREA II OF OLINDA



3.2. STUDY DESIGN

3.2.1. Overview

A cross-sectional study was carried out in area II of Olinda from March to November 1993 to investigate the specific links between social class and common mental disorders (CMD). CMD was assessed using the twenty questions version of the Self Reporting Questionnaire - SRQ-20 (appendix 1). The screening instrument and a questionnaire designed to obtain information about demographic and socioeconomic characteristics, employment status, migration and working conditions[2] (appendix 2), were administered to 621 individuals aged fifteen and over from a randomly selected sample of 226 households in the area. Individuals were classified into two groups according to their SRQ-20 scores: negatives, if the score was seven or less; and positives, if the score was eight or more. A validation study was performed in which the SRQ-20 was compared with an interview administered by a psychiatrist. All positives and a randomly selected sample of those negatives were referred for a psychiatric interview (further details are given in sections 3.3 and 3.4).

3.2.2. Justification for the choice of study design

The choice of a cross-sectional design was based on logistic considerations. Cross-sectional studies are particularly efficient in terms of both time and costs and permit the evaluation of a wide range of exposures that might relate to CMD as well as the interrelationship among these factors. Furthermore, the information provided by cross-sectional studies is essential

[2] The relationship between working conditions and CMD will be explored in future publications.

for public health administrators because knowledge of which population or subgroups are most or least affected by disease allows the most efficient allocation of resources [Hennekens and Buring, 1987]. Since cross-sectional surveys consider prevalent rather than incident cases, they cannot discern between factors associated with increased incidence of disorder from those associated with increased duration of episodes, duration being important for episodic conditions such as CMD. The main disadvantage of cross-sectional surveys is that, usually, they cannot discern whether the exposure preceded or resulted from CMD. Reverse causality is particularly difficult to exclude as an explanation, since the natural history of CMD is often one of relapse and remission of many years [Weich and Lewis, in press].

The most efficient study design would have been a prospective cohort, given its ability to more clearly assess the temporal sequence between exposure and disease. Moreover, cohort studies allow the direct calculation of incidence rates of the outcomes under investigation in the exposed and unexposed groups. However, due to the relapsing nature of CMD, it would need to start in adolescence for real onset. Prospective cohort studies are time-consuming and expensive, time and resources being in this case major constraints.

3.3. SAMPLING PROCEDURE

The study population was defined as everyone aged 15 and over living in area II of Olinda at the time of the data collection and the sampling unit was the household[3]. The sample size necessary to estimate the prevalence of CMD in the adult population was calculated according to the following formula [Bennett, 1991]:

$$n = \frac{4p(1-p)}{w^2}$$

where: n is the required number of people,

p is the assumed prevalence of CMD and

w the absolute precision.

The adjustment to take into account the finite population correction was given by [Moser and Kalton [1971]:

$$n' = \frac{n}{1+(\frac{n}{N})}$$

where n is the solution of the previous formula and N is the population size. Assuming the value of w as 3% (which means that the 95% confidence interval stretches 3% either side of the estimated value) and accepting the prevalence as 17% (according to the preliminary results of the Brazilian Multicentric Study of Psychiatric Morbidity [Guerra and França, 1990]) the following results were obtained:

n = 627
n' = 620

[3] A household was considered as those living under the same roof and sharing the same budget.

The expected number of SRQ-20 positive was 105 (17% of 620).

The estimated number of households necessary to select a sample of approximately 620 subjects in the age group 15 and over was 207 households using the following calculations:

- The total population of area II was 101 523 inhabitants, by the time of the data collection. The population of area II in the age group 15 and over was 62 363 inhabitants, representing 61% of the total population.
- The average number of individuals per household was 5 [FIDEPE, 1980].
- Since 61% of 5 is 3, the average number of individuals per household in the age group 15 and over was 3.

Related to the specific objectives, it was important to consider how many subjects were needed in order to demonstrate a significant difference for CMD comparing the different groups. The number of subjects selected for this purpose depended mainly on the specification of four items [Pocock,1990]:

p_1 = proportion of one group (prevalence of CMD in the exposed group).

p_2 = proportion of the other group which one desires to detect as being different from p_1 (prevalence of CMD in the unexposed).

α = the level of the χ^2 significance test used for detecting the difference (often set at 0.05).

1-ß = the degree of certainty that the difference $p_1 - p_2$, if present, would be detected (often set at 0.90).

α, commonly called the type I error, is the probability of detecting a significant difference when the difference does not exist.

ß, commonly called the type II error, is the probability of not detecting a significant difference when there really is a difference of magnitude p_1-p_2.

1-ß, is called the power to detect a difference of magnitude p_1-p_2.

The required number of subjects on each group n was given by the following formula:

$$n = \frac{p1(1-p1)+p2(1-p2)}{(p2-p1)^2} xf(\alpha,\beta)$$

where f(α,ß) is a function of α and ß, the values of which are given in table 9.1 from Pocock [1990].

Using income as a proxy measure for socioeconomic status and assuming the proportion of population who earn less than three minimum wages in the Northeast as 70% [according to IBGE, 1983] and taking the results from the Brazilian Multicentric Study of Psychiatric Morbidity [Guerra and França, 1990][4] as the expected difference between the groups, the sample size required to achieve a power of 90% in detecting a significant difference at the 5% level was 262 subjects in the group who earns less than three minimum wages and 114 in the group who earns over three minimum wages.

The adjustment factor to be used in study designs to compare unequal sized groups was given in the following formula [Huttly, 1991]:

$$f = \frac{(c+1)}{(2c)}$$

where $c = \pi_e/(1-\pi_e)$ and π_e is the prevalence of exposure

[4] From the study, a rough estimate of the prevalence of psychiatric morbidity in the group who earns less than 3 minimum wages was 19% and is 7% in the group who earns over 3 minimum wages, leading to a difference between the two groups of 12%.

The size of the larger group has to be **c** times that of the smaller group. The sample size of the smaller group is therefore *f*n, where **n** is the number required for equal size groups (obtained from the previous formula), and c*f*n is the size of the larger group.

Taking employment status as the exposure of interest, the sample was divided into two groups: unemployed/underemployed and employee/employer. Assuming the prevalence of CMD among unemployed/underemployed as 24.8% and among employee/employer as 8.75% (according to the Brazilian Multicentric Study of Psychiatric Morbidity, 1990)[5] and following the formula above, it was necessary to have 72 individuals in the former group and 227 in the latter.

The proportion of migrants and of some aspects of working conditions were not available. Because of this, these variables were not taken into account for the calculations required for the size of the sample.

The sample frame was based on a detailed and updated list of households, provided by the Brazilian Demographic Census Bureau (IBGE). The list of households as well as maps, which allowed the identification of those houses in relation to the city, street and census sectors, were those used in the 1991 Census. A simple random sample of 226 households was selected taking the random numbers generated by the scientific calculator Casio fx-3400p. Within selected households, all members aged fifteen and over (n=683) were included in the study.

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5 The prevalence of unemployment for the region was considered as 5.65% (IBGE, 1991b) and the level of underemployment as 18.3% [Mari and Andreoli, 1992].

3.4. DATA COLLECTION

3.4.1. Fieldwork

Data collection was community-based through interviews and assessment of mental health status. The first stage was performed from March to November 1993 by six interviewers paid for by the research funds: two community agents from area II who had completed a secondary course (at least 11 years of schooling) and four students from the Pernambuco Faculty of Medical Sciences. Information on recruitment and training of interviewers is described in section 3.5.1.

Every work day the principal investigator and the fieldwork supervisor provided each interviewer with a list of the households to visit that day along with the corresponding maps. When a household was described by the interviewer as unoccupied or when the address could not be found, the household was visited again by another interviewer and also, a few days later, by the fieldwork supervisor and the principal investigator. If the information was confirmed another household was drawn. Churches, schools, commercial establishments and buildings belonging to the public administration, if chosen by the sampling procedure, were replaced by additional randomly selected households.

First the interviewer introduced him/herself showing an identification card and explaining briefly that the research was about general living, health and working conditions in Olinda and was being carried out by the Pernambuco Faculty of Medical Sciences and Olinda Local Government. The next step was to obtain consent from the interviewee before the beginning of each interview. In the case of refusals, the household was re-visited by the fieldwork supervisor or by the principal investigator. There were no instances of entire households

refusing to participate. Information was gathered on all household members and efforts were made to interview all those aged 15 and over. As the level of illiteracy was supposed to be high in the area, the questions were read by the interviewer to all subjects. The SRQ-20 was scored by the principal investigator for each person.

3.4.2. Psychiatric Interview: Validation study

Although the SRQ-20 has been accepted as a suitable procedure to detect psychiatric morbidity in epidemiological studies [Harding et al., 1980; Mari and Williams, 1986; Araya et al.,1992], the application of a psychiatric interview is still regarded as the gold standard for `caseness'. A sub-sample of subjects was selected for a confirmatory psychiatric interview to determine the optimal threshold point for case definition, as presented in figure 3.7. Everyone with high scores (SRQ-20 equal to or above eight) and a randomly selected sample of those with low scores were referred for a psychiatric interview in the Local and State Government Health Centres closest to the subject's household from May to November 1993. The subjects did not know that they were going to be interviewed by psychiatrist. They only knew that they were going to see a doctor to have a `medical examination'. The psychiatric assessment was carried out by two experienced psychiatrists paid for by the research funds, who were familiar with the type of participants involved. They made a diagnosis using a semi-structured interview (questions were prepared in advance but they were allowed to ask supplementary questions to decide upon the presence of absence of psychopathology) based in the DSM III-R categories. Psychiatrists, the subjects and their families were blind to the screening and questionnaire results.

Any respondent who asked for or needed treatment, whether for psychiatric symptoms or

for other symptoms, was referred to their Local General Practitioners.

FIGURE 3.7 - FLOW CHART OF DATA COLLECTION

3.4.3. The Questionnaire

The questionnaire was designed to obtain information on possible determinants and potential confounders for CMD (appendix 2). Further to the literature review, the key variables selected to investigate were: gender, age, marital status, education, occupation, income, house ownership, housing conditions, possession of household appliances, employment status, migration and working conditions. Most variables are self-explanatory, however, some deserved definition to improve the understanding of the information collected.

The explanatory variables assessed were classified into the following categories:

a) **Demographic characteristics** referred to age, gender and marital status,.

b) **Socioeconomic characteristics** included literacy, education, occupation, household and household *per capita* monthly income, house ownership, housing conditions and possession of household appliances.

Education

Education was assessed in terms of years of schooling and recorded as a continuous variable. Later on, it was grouped in: 0-4 (never went to school or did not complete the elementary school); 5-7 (did not complete the primary school); 8-10 (completed primary school) and ≥ 11 (completed secondary school) and analyzed as an ordered categorical variable.

Occupation

The occupation of a person was the kind of work which he or she performed. Occupation was categorized according to the classification adopted by the Brazilian Census [IBGE, 1992], which is based on the International Standard Classification of Occupations. On regards those seeking work, disabled and retired, the reference was the previous occupation. To make these data comparable with others, personal occupation was arranged in eight categories as follow:

Non-manual: Professional, Intermediate and Skilled

Manual: Skilled, Partly skilled and Unskilled

Other: Housewives and Students

For the purposes of analysis, to obtain sufficient number in each cell, occupations were combined into 4 categories: Non-manual, Manual, Housewives and Students.

Household income

Household income, expressed as multiples of the official minimum wage[6] earned by all people living together in the month preceding the interview, was categorized in the following groups: 1) 0 to 1; 2) >1 to 3; 3) >3 to 5; 4) >5 to 10 and 5) >10.

Household per capita monthly income

Household *per capita* monthly income was the total household income in the month preceding the interview divided by the number of people in the household.

6 The official minimum wage varied from US$ 59.2 to US$ 88.5 in 1993. Variations were due to the changing rate of inflation.

Room density

Room density was the number of people living together divided by the number of rooms in the household.

Housing condition and possession indices

As no single item related to housing conditions and possession of household appliances provides a complete representation of socioeconomic status, two composites measures were created - housing condition and possession indices.

The *housing condition index* took into account housing building material, toilet and room density coded as follow:

Building Material	Walls	Redbrick	1
		Others	0
	Roof	Tiles/cement	1
		Others	0
	Floor	Ceramic/wood	2
		Cement	1
		Earth	0
Toilet		Inside flush	2
		Outside flush	1
		Communal	0
Room density		0.1-0.7	2
		0.71-0.9	1
		≥ 1	0

The mean was calculated for the sum and individuals with values below the mean were classified as having low housing conditions. Those with values around the mean (mean ± 1 standard deviation) were classified as medium and those above the mean plus 1 standard deviation as high.

The *possession index* took into account access to a fridge, television, stereo set, telephone, air conditioning, washing machine and car. One point was given for each item. The

categories for the possession index were calculated in the same way as the housing condition index.

c) **Migration**

Migrant

Migrant was defined as a person who moved into the RMR after two years of age, from the Pernambuco State or from any other state. Migration was also assessed in relation to age when migration occurred, different periods since migration and place of birth. Migrants could be either of rural or urban origin, depending on their place of birth. Urban migrants were those who came from areas that are classified by the Brazilian Census Bureau as cities (municipal centres).

d) **Employment status** referred to paid workers, unemployed and inactive. To make these data comparable with other Brazilian studies [Almeida-Filho, 1982; Santana et al., in press], paid workers were divided in formal and informal workers.

Formal worker

Formal worker was someone who was formally placed in the labour market and included employer and employee. *Employer* - someone who was responsible for or who assumed the risks of a business or enterprise. *Employee* - someone who was formally employed, received at least the regional minimum wage, had a signed working card and was regularly registered with the Labour Office .

Informal worker

Informal worker comprised a heterogenous group of non-formally hired employees (underemployed) and independent workers (self-employed) who formed an underprivileged category for whom there was no protection by labour or social regulations [Urani, 1995]. *Self-employed* - someone not employed by any person or company, who worked either in isolation or in a family business, with no employer and no waged employees under his/her command. *Underemployed* - non-formally hired employee, who received any type of payment, who did not have a signed working card and was not registered with the Labour Office.

Unemployed

Unemployed was someone who was not working but had been looking for a job.

Economically inactive

Inactive was someone who was neither engaged in a productive activity nor looking for a job. This group comprised students, housewives and retired from employment.

Student - person aged 15 and over who was attending educational establishment. *Housewife* - person engaged entirely in unpaid domestic duties. *Retired* - formerly employed person who have ceased working and is no longer seeking further employment.

f) **Working conditions** data were collected but have not been used for this analysis.

3.4.4. The Self Reporting Questionnaire

The Self Reporting Questionnaire - SRQ-20 - was developed by Harding et al. [1980] for the World Health Organization collaborative study to screen for CMD in primary health care, applicable in different cultural settings, especially in developing countries [WHO, 1993]. A series of international collaborative studies conducted by the World Health Organization have used SRQ-20 and, in recent years, the psychometric qualities of the SRQ-20 have been assessed in over twenty studies with sensitivity figures ranging from 63% to 90% and specificity ranging between 44% to 95% [WHO, 1993].

The SRQ-20 was originally designed as a self-administered scale, but was found to be a workable interviewer administered questionnaire. It has been recommended that in countries where the level of literacy is low, the indirect application of the SRQ-20 by health workers is more suitable [Mari, 1987].

Two important reasons encouraged the use of the SRQ-20 in this study. First, it is suitable for use by lay field workers with limited training [WHO, 1993], saving research resources, of great importance when conducting community surveys in developing countries. Second, it has been tested and validated in Brazilian urban settings [Busnello et al., 1983; Mari, 1987]. Thus it offered the advantage of being available in its Portuguese version without the need for field testing the translation.

The SRQ-20 is composed of twenty yes-no questions - four on physical symptoms and sixteen on psycho-emotional disturbance (see appendix 1). The cut-off point between what is normal and what is abnormal is an artificial distinction. Before the validation study, low (non-cases) and high scores (cases) were defined as individuals with scores less than or equal to 7 and equal to or above 8, respectively. The choice of 7/8 cut-off point came from

the previous Brazilian study carried out by Mari [1987] in São Paulo. Following the validation procedure (as described in section 3.7.2.1) the cut-off point was re-defined as 5/6.

3.5. DATA QUALITY CONTROL

The strategies adopted to minimize errors during the data collection are described below.

3.5.1. Recruitment, training and supervision of interviewer

To select the interviewers from the community, the Local Government's community agents programme coordinator in area II was contacted. She appointed five community agents who she believed could satisfactorily accomplish the task proposed. To select the medical students the Research coordinator of the Pernambuco Faculty of Medical Sciences was contacted and he appointed six students with previous experience in fieldwork. The community agents and the medical students received one week's training. The main ideas and issues concerned in the study were discussed and the model of the study presented. The content and definitions of the screening instrument and of the questionnaire were explained. The importance of visiting every household and of avoiding proxy information were emphasised. Written instructions were prepared (appendix 3) in which clear criteria were given for recording positive and negative responses. The main instructions given to the interviewers among others were: 1. to create a situation in which the informants feel free to express their opinions; 2. to apply the SRQ-20 after the questionnaire; 3. to avoid expressing value judgements and to avoid suggesting answers; 4. questions should be asked exactly as they were written; 5. questions should be asked in the same order as they appeared and 6.

questions which were misunderstood or misinterpreted should be repeated and clarified.

The trainees were involved in simulated interviews along with discussions and clarifications during and after each session and also in pre-testing the questionnaire. A small **pilot study** (23 respondents) was carried out to identify problems in finding sample members and in obtaining interviews. This was done in the same area under study but in households not selected by the sampling. This was also used to check the wording of the questionnaires. After this period, seven interviewers were selected. The results of the experience were discussed and the necessary changes made. To ensure the blindness of the study the interviewers did not know the specific objectives being investigated. They were informed that the research was about general living, health and working conditions in Olinda, carried out by the Faculty of Medical Sciences and Olinda Local Government.

Regular on-site supervision of the interviewees took place throughout data collection by the principal investigator.

3.5.2. Reliability Study

Thirty six individuals were re-interviewed by the principal investigator at the health centres to check the consistency of the SRQ-20 dichotomized scores (positive and negative) when the screening was administered to the same person by a different interviewer.

3.5.3. Minimization of random and systematic errors (BIAS).

Even the most rigorously designed investigation has the potential to be biased. Bias can be of several types arising from a large number of sources including the manner in which subjects are selected for the study and the way in which information is obtained, reported or interpreted [Hennekens and Buring, 1987]. Bias tend to produce results that differ systematically from the truth [Sackett, 1979] . Minimization of bias in the design phase of an investigation is crucial to the validity of the study results.

Bearing in mind the inherent limitations of the design adopted, this survey was carefully planned to minimize the usual causes of errors and biases when using a cross-sectional study. Possibilities for introducing errors were anticipated and the steps that have been taken to minimize its occurrence are described below.

As a sample of the adult population living in area II of Olinda was taken, the results will not be equal to the correct results for the whole population. The sampling results will be subject to two types of error: random error and selection bias.

3.5.3.1. Random error

Random error results in an estimate of effect being equally likely to be above or below the true value. The major component of random error in epidemiological studies is sampling error. Sampling error cannot be eliminated. However, one of the aims of good designs is to reduce it to an acceptable level within the constraints imposed by finite resources [Epidemiology Manual, 1990/91]. To reduce the random error to an acceptable level, a suitable choice of a sample size was made. In calculating the required sample size for the

study it was assumed that the likelihood of erroneously rejecting the null hypothesis (type I error) was 5 % (or 1 in 20) and p = 0.05, and that the likelihood of not detecting a significant difference when there really is a difference (type II error) was 0.10 (see section 3.3). Individuals within households tend to be similar to each other in social and psychological terms and this can result in substantial increase in the standard errors of the prevalence estimates [Jenkins et al., 1997]. Account of clustering of respondents within households will be presented in section 3.7.3.

3.5.3.2. Selection bias

Selection bias refers to a distortion in the estimate of the effect as a consequence of the way in which subjects are selected for the study population [Kleinbaum et al., 1982]. Selection bias may be due to several problems: among the most important are flaws in the study design, especially regarding the choice of groups to be compared (in all types of study) and the choice of the sampling frame (notably in the case-control and cross-sectional studies); loss of members during a follow-up study or failure to obtain the information because of non-response and selective survival in case-control and cross-sectional studies. It may also occur when the procedure used to identify disease status in case-control studies varies with exposure status [Sackett, 1987; Kleinbaum et al., 1982].

To reduce selection bias, a careful design of the sampling procedure was carried out. The households were selected at random based on a detailed and updated list of households, ensuring that each household in the study area had an equal probability of being chosen for interview. Furthermore, everyone, and not only those at home by the time of the first approach for interview, were included in the study (see section 3.3). Repeat visits were

made to selected household to reduce non-response. Information on gender and income was collected on all household members and non-respondents were compared with respondents (section 4.1).

3.5.3.3. Measurement or information bias

Measurement or information bias results from systematic differences in the way data on exposure or outcome are obtained from the various study groups. If data are inaccurate or incomplete, spurious associations may be introduced only if the accuracy or incompleteness affects the two groups to an unequal degree [Hennekens and Buring, 1987]. The main types of information bias are discussed below.

Recall bias - arises when individuals with a particular adverse health outcome remember and report their previous exposure experience differently from those who are not similarly affected, or when those who have been exposed to a potential hazard report subsequent events with a different degree of completeness or accuracy than those unexposed [Hennekens and Buring, 1987]. Two approaches have been carried out to ensure the reliability of data reporting. The first was the internal consistency between items. For example if someone was categorized in the employment status question as unemployed, they should have answered those 2 questions also related to unemployment: how long have you been unemployed?; and how long have you been looking for a job? The second was the comparison of different sources for the same information: 1) questions about migration history, number of people living together, family income, housing conditions, possessions of household appliances were asked to everyone living in the household and the answers

compared; 2) comparison with the information from the psychiatric interview. Where discrepancies were found, repeat visits were made until a consensus was reached.

Interviewer-observer bias - interviewing may lead to different types of errors in the collection of the survey data that may affect the reliability of the conclusions drawn. To cope with this source of bias a highly objective, close-ended questionnaire was chosen. To avoid their interference in the results the interviewers were carefully chosen. Much attention was paid to their training and the wording of the questionnaire. The coding of the questionnaire was done by the interviewers but it was later reviewed by the principal investigator. The study personnel (interviewees and psychiatrists) were blind to the main objectives of the study and psychiatrists to the screening scores and questionnaires' results. Quality control of the collected information was carried out by the principal investigator on the day following the interview by means of a systematic scrutiny of the questionnaires for consistency and completeness. The interviewers were requested to re-visit a household as many times as was necessary to obtain overlooked data or to check inconsistent information.

3.6. DATA MANAGEMENT

3.6.1. Data handling and data quality control

Data handling and data quality control were performed by the principal investigator during the fieldwork. The questionnaires were checked daily for accuracy, consistency and completeness.

3.6.2. Data processing

Double data entry was conducted by two computer assistants onto an IBM-compatible micro-computer using dBase IV [Ashton-Tate Corporation, 1990]. The programme `validate' from EPI INFO version 5.01 [Centers for Disease Control, 1990/91] was applied for data validation. Any discrepancies identified during validation were resolved by checking with the questionnaires.

3.7. DATA ANALYSIS

This section briefly describes the procedures used for data analysis. A preliminary analysis was undertaken using EPI INFO, version 5.01 [Centers for Disease Control, 1990/91]. At a later stage this was replaced by Stata for Windows, version 4.0 [Stata Corporation, 1995] when more complex analyses were required. A program supplied by Jane Murphy was used to perform a ROC analysis.

3.7.1. Descriptive analysis

The first step of the analysis was a description of the basic frequency distribution of the variables selected for the study. Single variables were also examined for checking of ranges and consistency.

3.7.2. Comparison between SRQ-20 scores and Psychiatric Interview results

3.7.2.1. The choice of a new cut-off point

ROC (Relative Operating Characteristics) analysis was used to determine the optimal SRQ-20 threshold point for case definition. The discriminating power of the SRQ-20 across all the possible cut-off points using Psychiatric Interview as the criterion was studied and sensitivities and specificities calculated. A ROC curve was fitted, using a statistical program, by plotting the sensitivity against false positive rate for all possible cut-off points of the SRQ-20. The area under the curve is regarded as an useful index of the discriminating ability of the screening test [Mari and Williams, 1986; Araya et al, 1992; WHO, 1993].

Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and overall misclassification rate (OMR) are measures of the validity of a screening test. Sensitivity is defined as the probability of testing positive given the disease is truly present and specificity is the probability of screening negative given the disease is truly absent [Hennekens and Buring, 1987]. PPV is the proportion of individuals with positive test results who are correctly diagnosed and NPV is the proportion of individuals with negative test results who are correctly diagnosed [Altman, 1991]. OMR is the percentage of misclassified respondents [Araya et al., 1992].

According to the WHO guidelines "A user's guide to the Self Reporting Questionnaire" [1993, p.18]"...usually, in selecting respondents for the second stage, only a proportion of low scores on the SRQ-20 will be further examined. It is to be expected that there will be very few cases (identified by the psychiatric interview) in the group of respondents who

scored under the cut-off point. On the other hand, all the high scores should preferably be followed up. This procedure is called stratified sampling... The consequence of using subsamples is that findings have to be weighted to give valid information on the total population studied." Calculating the prevalence, sensitivity and specificity based on the data in the second stage, would inevitably lead to biassed estimates.

In this study, since not all the low scores on the screening (SRQ-20 negative) were followed-up, false negatives and true negatives in the first stage had to be estimated. The results were weighted in order to restore the proportion of SRQ-20 negatives in the original sample.

3.7.2.2. Misclassification

Misclassification occurs whenever subjects are erroneously categorized with respect to either exposure or disease status. Since in any study some degree of inaccuracy in reporting or recording information is inevitable, misclassification is always a potential concern. The effect of such misclassification depends on whether the misclassification with respect to exposure (or disease) is dependent on the individual's disease (or exposure) status. When the misclassification is random or non-differential, the proportion of subjects erroneously classified in the study groups are approximately equal. Despite the fact that random misclassification is not a systematic error, it increases the similarity between the exposed and non-exposed groups and any true association between the exposure and disease will be diluted (biased). A more serious problem arises if the proportion of subjects misclassified differs between the study groups. The effect of such non-random or differential misclassification is that the observed estimate of effect can be biased in the direction of

producing either an overestimate or underestimate of the true association, depending on the particular situation. It is even possible that the estimate will be correct due to the play of chance or the effect of an additional bias [Hennekens and Buring, 1987]. A differential misclassification has been reported in the assessment of CMD by the SRQ-20. Less educated people are more commonly misclassified as false positive and better educated respondents, as false negative. Also men show greater chance of being misclassified as false negative than women [Mari and Williams, 1986; Araya et al., 1992]. The results from Stansfeld and Marmot [1992] in British civil servants showed a reverse pattern and people in lower employment grades tend to under-report symptoms on the GHQ-30 relative to those in higher employment grades. The association between the variables under study and misclassification were investigated and the size of misclassification estimated.

3.7.3. Univariate analysis

CMD was cross-tabulated with demographic and socioeconomic variables, employment status and migration. The SRQ-20 dichotomised scores (≤ 5 and ≥ 6 - the new cut-off point following the ROC analysis) were taken as the dependent variable. Odds ratios and 95% confidence intervals were calculated to estimate the magnitude of the association between the explanatory variables under study and CMD, comparing the different groups. Logistic regression analysis, both before and after adjustment for potential confounding, was performed utilizing Huber's weights [Huber, 1967] to adjust variance estimates taking account for the clustering of respondents within households. Significance tests using likelihood ratio statistics (LRT) were performed. The usual cut-off point 0.05 was taken as the level of significance, that is, p values of greater than 0.05 was considered `not

significant'. However, the actual p values are quoted even when they were not significant to allow the reader's own interpretation, since this cut-off is an arbitrary point [Altman, 1991].

3.6.4. Multivariate analysis

Logistic regression was performed to deal with the complex interrelationships among the variables under study. Logistic regression is a mathematical modelling approach that can be used to describe the relationship of several independent variables (exposure under study + control variables) to a dichotomous dependent variable [Kleinbaum, 1994]. First it was carried out to investigate the best socioeconomic status variables that were independently associated with CMD. Second, to evaluate the extent to which employment status and migration were associated with CMD accounting or `controlling for' potential confounding and later on, to investigate the effect of demographic and socioeconomic characteristics, employment status and migration on misclassification by the SRQ-20. Each model was constructed by including at the same time all the variables which, in light of current knowledge, could have a confounding effect on the association between CMD and the exposure of interest. Unconditional maximum likelihood was used for estimating the parameters in the logistic model and likelihood ratio test (LRT) was performed to investigate the significant differences between the models. The assessment of confounding was to monitor changes in the odds ratios corresponding to different subsets of potential confounders in the model. It was carried out without using statistical testing. This followed from general epidemiologic principles in that confounding is a validity issue.

CHAPTER 4 - RESULTS

This chapter is divided into 3 parts. The first part describes the sample according to demographic and socioeconomic characteristics, employment and migration status. The second, presents the measures of common mental disorders (CMD). The final part of the chapter shows the association between each explanatory variable and the prevalence of CMD followed by multivariate analysis. The multivariate analysis was used for three purposes. First, to investigate the best socioeconomic status variables that independently differentiate between cases and non-cases of CMD. Second, to examine the extent to which employment status and migration were associated with CMD after adjusting for potential confounders and finally, to assess the effect of demographic and socioeconomic variables, employment status and migration on misclassification by the SRQ-20.

4.1. DESCRIPTION OF THE SAMPLE

This section gives a brief description of the sample according to demographic and socioeconomic characteristics, employment status and migration. After excluding non-existent addresses, empty or business properties, 226 households (100%) participated in the survey, comprising 683 individuals aged 15 and over. Six hundred and twenty one subjects completed the SRQ-20 (91%). Response rate varied by gender, being 96% in females and 85% in males ($p<0.0001$), though, no statistically significant difference was found on household *per capita* monthly income (92% in those with a lower income, 90% in medium income and 95% in those with higher income; $p=0.14$).

4.1.1. Demographic Characteristics

Table 4.1 presents the distribution of gender, age and marital status in the sample. Forty three percent of the sampled population were men and 57% women. The majority of them were aged 25 to 54 years, 30% were under 25 and only 15% were 55 and over years of age. Most of the study population was married (50%). Around 36% were single and 13% separated or widowed. When the composition of the study sample was compared with Olinda's population, based on the 1991 Census, differences were very small regard to gender (45% were men) and age distribution (32%, 54%, and 14%, respectively for 15-24, 25-54 and ≥ 55 age groups).

Table 4.1 - *Distribution of study sample by demographic characteristics*

VARIABLES	n (N=621)	%
GENDER		
Male	266	42.8
Female	355	57.2
AGE (years)		
15-24	187	30.1
25-54	338	54.4
≥ 55	96	15.5
MARITAL STATUS		
Single	224	36.1
Married	313	50.4
Separated/widowed	84	13.5

4.1.2. Socioeconomic Characteristics

Socioeconomic status was assessed in relation to literacy, years of schooling, occupation, income distribution (Table 4.2), ownership of the house, housing building material, hygiene conditions, room density (Table 4.3), and possession of household appliances (Table 4.4).

Education - Most of the sample had received little education. Around 57% of the study population never went to school or did not complete the first level (less than 8 years of schooling). Furthermore, 10% of the sample were unable to read or write.

Occupation - The majority of the sample were manual (40%) or skilled non-manual (22%) and only around 5% were professional and intermediate workers.

Income - Income, assessed as a multiple of the official minimum wage (MW), was explored in terms of household monthly income and household *per capita* monthly

income. It was rather low for the whole study population. About 54% of the households earned up to 3 MW per month and only around 11% more than 10 MW. *Per capita* income shows that over two thirds (76%) of the families earned up to 1 MW per person monthly.

House ownership and housing conditions - The majority of the families (81%) owned the houses in which they lived. Most of the houses were built of redbrick (92%) with a tile or cement roof (77%) and a cement floor (70%). Sanitation, assessed by the presence of an indoor flush toilet, was available to 81% of the households. Forty three percent of the households had a room density of 1 and more person per room. A composite measure was created - housing condition index - taking into account housing building material, toilet and room density. The mean for the sum and its standard deviation were 6.52 and 1.75, respectively. Seventy four percent of the sample were in the medium category (Table 4.3).

Possession of household appliances - Although the majority of households possessed a fridge, television and stereo set, only a small proportion owned a telephone (14%), air conditioning (6%), a washing machine (10%) or a car (20%). Mean possession index was 2.98 (standard deviation=1.39) and 79% of the sample were in the medium category (Table 4.4).

Table 4.2 - *Distribution of study sample by socioeconomic characteristics*

VARIABLES	n (N=621)	%
LITERACY		
Literate	559	90.0
Illiterate	62	10.0
EDUCATION (years of schooling)		
0-4	187	30.1
5-7	164	26.4
8-10	118	19.0
≥11	152	24.5
OCCUPATION [1]		
NON-MANUAL		
Professional	4	0.6
Intermediate	29	4.7
Skilled	139	22.5
MANUAL		
Skilled	113	18.3
Partly skilled	96	15.6
Unskilled	37	6.0
OTHER		
Housewives	125	20.3
Students	74	12.0
HOUSEHOLD MONTHLY INCOME (minimum wage) [2]		
0 - 1	64	10.6
>1 - 3	267	43.8
>3 - 5	103	16.9
>5 - 10	111	18.2
> 10	64	10.6
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (minimum wage) [2]		
0 - 1/4	70	11.5
>1/4 - 1	392	64.4
>1	147	24.1

[1] 4 missing values
[2] 12 missing values

Table 4.3 - *Distribution of study sample by house ownership and housing conditions*

VARIABLES	n (N=621)	%
HOUSE OWNERSHIP		
Owned	504	81.2
Rented	117	18.8
HOUSING BUILDING MATERIAL		
WALLS		
Redbrick	570	91.8
Others	51	8.2
ROOF		
Tile,Cement	477	76.8
Others	144	23.2
FLOOR		
Ceramic,Wood	156	25.1
Cement	436	70.2
Earth	29	4.7
TOILET		
Flush inside	504	81.2
Flush outside	72	11.6
Communal	45	7.2
ROOM DENSITY (no.of people/room)[1]		
0.1 - 0.7	203	32.7
0.71 - 0.9	148	23.9
≥ 1	269	43.4
HOUSING CONDITION INDEX[1]		
High	81	13.1
Medium	460	74.2
Low	79	12.7

[1] 1 missing value

Table 4.4 - *Distribution of study sample by possession of household appliances*

VARIABLES	n (N=621)	%
FRIDGE		
Yes	531	85.5
TV		
Yes	560	90.2
STEREO SET		
Yes	449	72.3
TELEPHONE		
Yes	90	14.5
AIR CONDITIONING		
Yes	35	5.6
WASHING MACHINE		
Yes	60	9.7
CAR		
Yes	126	20.3
POSSESSIONS INDEX		
High	75	12.1
Medium	488	78.6
Low	58	9.3

4.1.3. Employment Status

Table 4.5 presents the distribution of the sample according to economic activity and employment status. Around 63% of the study population were economically active (paid workers and unemployed) and 37% were inactive (students, housewives and retired). Informal workers represented 38% of the economically active (and 48% among those in paid work) while 21% of them were unemployed. The mean unemployment duration was significantly higher (p=0.03) among women (28 months, standard deviation=30.9) when compared to men (15 months, standard deviation=16.1).

Table 4.5 - *Distribution of study sample by economic activity and employment status*

ECONOMIC ACTIVITY	n (N=621)	%	EMPLOYMENT STATUS	n (N=621)	%
ACTIVE	390	62.80	**PAID WORKERS**	306	**78.46**
			Formal	159	52.00
			Informal	147	48.00
			UNEMPLOYED	84	**21.54**
INACTIVE	231	37.20	**OTHER**	231	**37.20**
			Students	70	30.30
			Housewives	124	53.68
			Retired	37	16.02

Table 4.6 shows the working characteristics for those in paid work. Formal workers had better salaries, were more likely to be working in their own profession and a higher proportion of them were qualified. Although around 90% of the working population said to be happy about their job, more than 40% had the intention to change.

Table 4.6 - *Distribution of working characteristics for those in paid work (N=306)*

PAID WORKERS	FORMAL (N=159)	INFORMAL (N=147)	TEST OF SIG.*
VARIABLES	n (%)	n (%)	
SALARY[1] (MW)			
<1/2	0	38 (26.9)	$\chi^2_{(3)}$=63.69
1/2 - 1	28 (17.6)	39 (27.7)	p<0.0001
>1 - 2	60 (37.7)	40 (28.4)	
>2	71 (44.7)	24 (17.0)	
HOURS OF WORK[2]			
Full-time	125 (80.1)	102 (73.9)	$\chi^2_{(1)}$=1.61
Part-time	31 (19.9)	36 (26.1)	p=0.20
FRINGE BENEFITS[3]			
Yes	159 (100)	27 (18.5)	$\chi^2_{(1)}$=212.51
No	0	119 (81.5)	p<0.0001
SKILLS			
Skilled	149 (93.7)	128 (87.1)	$\chi^2_{(1)}$=3.92
Unskilled	10 (6.3)	19 (12.9)	p=0.05
WORKING IN PROFESSION			
Yes	127 (85.2)	99 (77.3)	$\chi^2_{(1)}$=2.85
No	22 (14.8)	29 (22.7)	p=0.09
JOB SATISFACTION[4]			
Yes	146 (93.0)	131 (91.0)	$\chi^2_{(1)}$=0.42
No	11 (7.0)	13 (9.0)	p=0.52
INTENTION TO CHANGE JOB[5]			
Yes	64 (40.8)	65 (45.5)	$\chi^2_{(1)}$=0.67
No	93 (59.2)	78 (54.5)	p=0.41

* (degrees of freedom)
[1] 6 missing values
[2] 12 missing values
[3] 1 missing value
[4] 5 missing values
[5] 6 missing values

4.1.4. Migration

Thirty percent of the sample were migrants while 70% were natives of the Recife Metropolitan Region (RMR). Migrants were also assessed in relation to age when migration occurred, different periods since migration and according to the place of birth. Table 4.7 shows that most migrants (75%) left their place of birth at age of 10 and over. The majority of them (69%) had been living in the RMR for more than 20 years and were from rural areas (62%).

Table 4.7 - *Distribution of study sample by migration status and migrants according to age at migration, different periods since migration and place of birth*

MIGRATION	N=621	%			
NATIVES	433	69.7			
			CHARACTERISTICS OF MIGRANTS	n	%
			AGE AT MIGRATION[1]		
			<10	47	25.4
			10-20	91	49.2
			>20	47	25.4
MIGRANTS	188	30.3	PERIOD SINCE MIGRATION[1]		
			<10	25	13.5
			10-20	33	17.8
			>20	127	68.7
			PLACE OF BIRTH		
			Urban area	71	37.8
			Rural area	117	62.2

[1] 3 missing values

4.2. MEASURES OF COMMON MENTAL DISORDERS (CMD)

4.2.1. The Self-Reporting Questionnaire - SRQ-20

CMD was assessed using the twenty questions version of the Self-Reporting Questionnaire (appendix 1). **Figure 4.1** shows the percentage of 'yes' responses to each of the SRQ-20 questions for the whole study population. Questions most frequently having a 'yes' response were: **6.** Do you feel nervous, tense or worried? (57%); **9.** Do you feel unhappy? (38%); **12.** Do you find it difficult to make decisions? (35%); followed by question **4.** Are you easily frightened? (33%). All of them reflect psycho-emotional disturbance.

FIGURE 4.1 - PERCENTAGE OF 'YES' RESPONSES TO SRQ-20

WHOLE SAMPLE

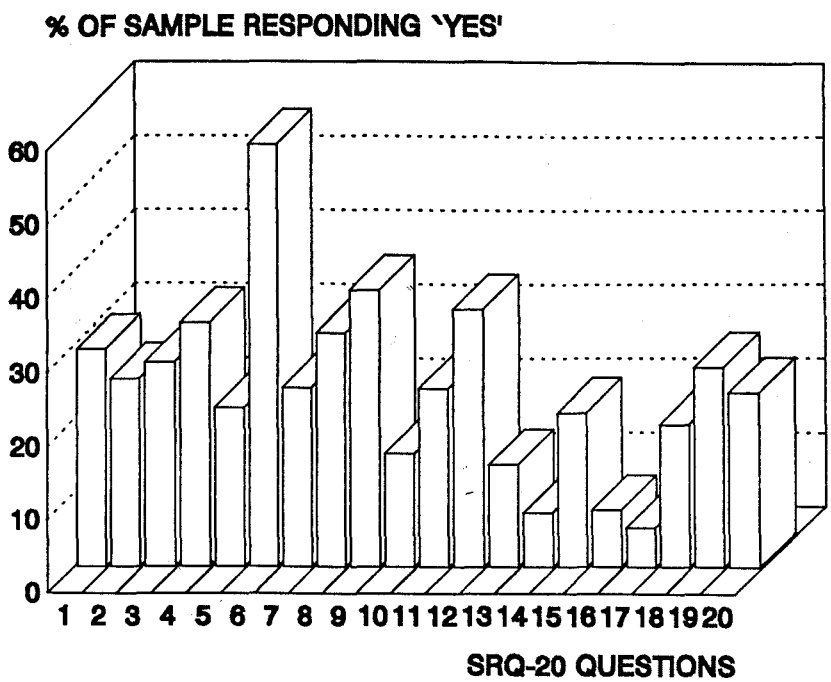
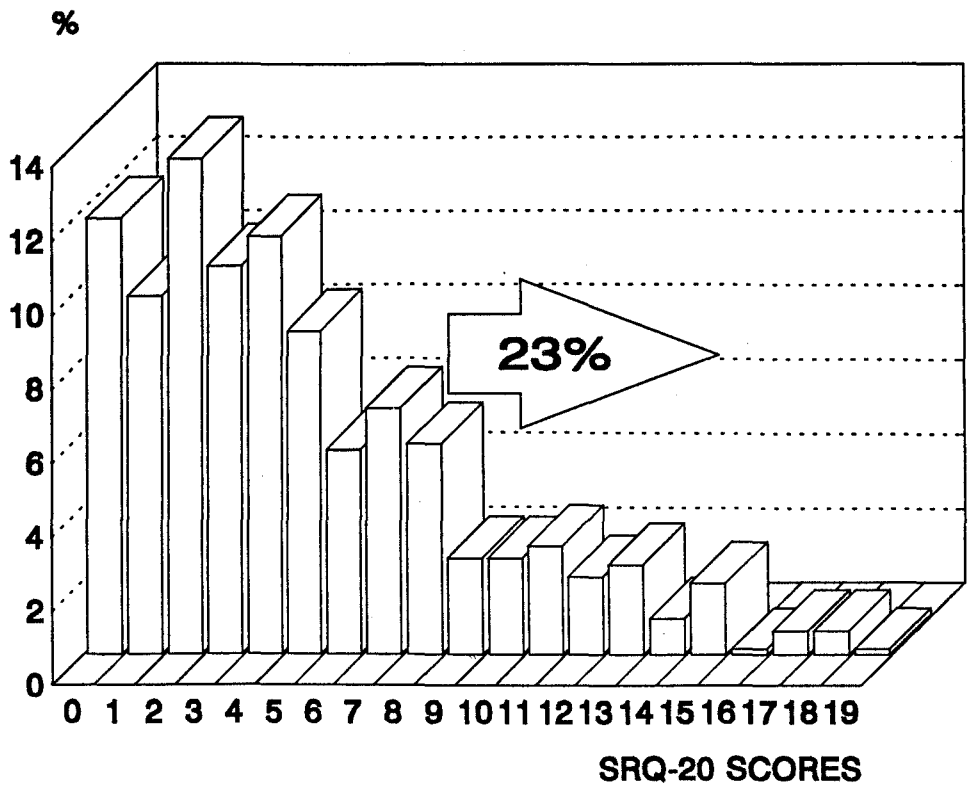


Figure 4.2 presents the distribution of the SRQ-20 total scores for the whole sample. Twenty three per cent of the study population (n=141) had a SRQ-20 score equal to or above 8.

FIGURE 4.2 - DISTRIBUTION OF THE SRQ-20 TOTAL SCORES

WHOLE SAMPLE



4.2.2. Psychiatric Interview - Validation Study

All those (n=141) with a high total score (SRQ-20 of 8 or more) and a randomly selected sample (n=51) of those with low scores (SRQ-20 of 7 or less) were invited for a psychiatric interview. Nineteen subjects with high scores (13%) did not go to the psychiatric interview because they either had insufficient time or were unwilling to go to the doctor. The 173 psychiatric interviews took place at the Local and State Government Health Centres. Table 4.8 shows the psychiatric diagnoses. Forty seven percent were related to anxiety disorders and 13% to depression.

Table 4.8 - *Diagnoses from the Psychiatric Interview*

Diagnoses	n	%
Anxiety Disorder	57	47.1
Dyssomnia	2	1.6
Depressive disorder	16	13.2
Phobia	5	4.1
Somatization disorder	2	1.6
Adjustment disorder	7	5.9
Personality disorder	10	8.3
Alcohol abuse	4	3.3
Psychotic disorder	6	5.0
Mild mental retardation	4	3.3
Other	8	6.6
Total[1]	121	100.0

[1] The total number of diagnoses do not correspond to the sum of psychiatric cases (n=95) due to occurrence of co-morbidity

4.2.3. Comparison between SRQ-20 scores and Psychiatric Interview Results

Table 4.9 shows the comparison between SRQ-20 dichotomized scores (cut-off point 7/8) and Psychiatric Interview Results

Table 4.9 - *Comparison between SRQ-20 dichotomized scores (cut-off point 7/8) and Psychiatric Interview.*

		Psychiatric Interview		
		Cases	Non-cases	Total
SRQ-20	Positive(≥8)	80	42	122
	Negative(≤7)	15	36	51
	Total	95	78	173

The results were weighted in order to restore the proportion of SRQ-20 negatives in the original sample. This was done by multiplying all ≤7 by 1/sampling fraction. It was assumed that the 19 SRQ-20 positives individuals who did not go to the psychiatric interview had the same proportion of true positives (66%) and false positives (34%) as the ones who attended. The weighted numbers are shown in Table 4.10.

Table 4.10 - *Comparison between SRQ-20 dichotomized scores (cut-off point 7/8) and Psychiatric Interview - weighted results.*

		Psychiatric Interview		
		Cases	Non-cases	Total
SRQ-20	Positive(≥8)	93	48	141
	Negative(≤7)	125	355	480
	Total	218	404	621

4.2.4. The choice of a new cut-off point - Relative Operating Characteristic (ROC) analysis

The Relative Operating Characteristic (ROC) analysis was used to study the discriminating power of the SRQ-20 across all the possible cut-off points using the Psychiatric Interview as the criterion. Table 4.11 presents the weighted sensitivity and specificity according to different cut-off points from ROC analysis and Figure 4.3 presents the ROC curve obtained by plotting the sensitivity against false positive rate for all possible cut-off points of the SRQ-20. The area under the ROC curve was 0.76 (standard error=0.02).

Table 4.11 - *Weighted[1] Sensitivity and Specificity according to different cut-off points from ROC analysis*

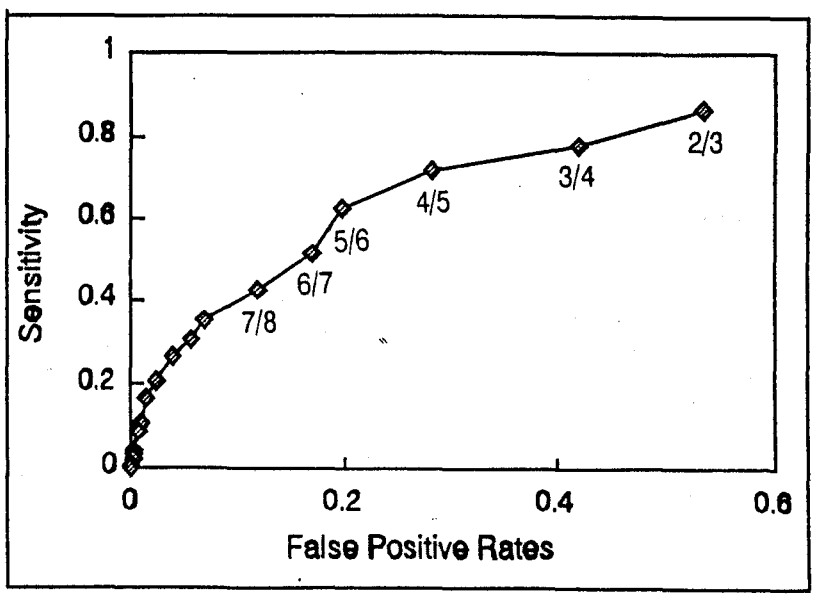
Cut-off	Sensitivity[2]	Specificity[3]
2/3	87	47
3/4	78	58
4/5	72	72
5/6	**62**	**80**
6/7	52	83
7/8	43	88
8/9	36	93
9/10	31	94
10/11	27	96

[1] Multiplying all ≤ 7 values by 1/sampling fraction

[2] True positive rate

[3] 1 - false positive rate

FIGURE 4.3 - ROC CURVE



On the basis of this analysis, 5/6 was chosen as the most appropriate cut-off point for dividing non-cases and cases as it was the closest point on the ROC curve to the upper left corner. Table 4.12. presents the weighted (multiplying all values by 1/sampling fraction) figures for the SRQ-20 5/6.

Table 4.12 - *Comparison between SRQ-20 dichotomized scores (cut-off point 5/6) and Psychiatric Interview Results - weighted results.*

		Psychiatric Interview		
		Cases	Non-cases	Total
SRQ-20	Positive(≥6)	136	80	216
	Negative(≤5)	82	323	405
	Total	218	403	621

Table 4.13 presents the validity coefficients for the SRQ-20 for 5/6 and 7/8 cut-off points using the Psychiatric interview as criterion, after weighting.

Table 4.13 - *Validity coefficients for the SRQ-20 for 5/6 and 7/8 cut-off points using the Psychiatric interview as criterion, after weighting*

Cut-off	Sensitivity (95% CI)	Specificity (95% CI)	PPV[1]	NPV[2]	OMR[3]	SRQ-20[4]	Psychiatric Interview[4]	Kappa (std error)
5/6	62(56-69)	80(76-84)	63	80	26	35	35	0.43(0.04)
7/8	43(36-49)	88(84-91)	66	74	28	23	35	0.33(0.04)

[1] Positive predictive value
[2] Negative predictive value
[3] Overall misclassification rate
[4] Prevalence

For the remainder of this analysis, SRQ-20 positive, cases of CMD, will be considered as those with scores 6 and above.

The sensitivity of the SRQ-20 in this study was 62%. This means that of those diagnosed with CMD by the psychiatric interview during the study period, approximately 62% tested positive on the screening procedure. The specificity of the study was 80% indicating that of those who did not have the disease 80% tested negative. Of the 216 individuals positive on the screening procedure 136 had a psychiatric diagnosis (PPV=63%) and among the 405 with a negative SRQ-20 the proportion of correct diagnoses was 80% (NPV). There was considerable disagreement between the methods and the kappa [Fleiss, 1987] was 0.43 (standard error=0.04).

4.2.5. Validity of the SRQ-20 by demographic and socioeconomic variables, employment status and migration

A differential misclassification by the SRQ-20 has been reported in the literature, males being more likely than females to be misclassified as false negatives and poorly educated as false positives [Mari and Williams, 1986; Araya et al, 1992].

In the present study, sensitivity was statistically significant lower in males, younger, students, in those living in a household in a medium category of income (>1/4 to 1 MW) formal workers and unemployed. On the other hand, specificity was significantly lower in females, elderly, less educated, housewives, in low income and migrants (Table 4.14).

Table 4.14 - *Validity of the SRQ-20 by demographic and socioeconomic variables, employment status and migration, using the Psychiatric Interview as criterion*

VARIABLES	Sensitivity	p-value	Specificity	p-value
GENDER				
Male	43.5	<0.0001	93.1	<0.0001
Female	68.2		68.2	
AGE				
15-24	58.3	0.005	87.4	<0.0001
25-54	58.2		79.7	
≥55	75.4		53.7	
EDUCATION				
(years)				
0-4	63.6	0.61	61.5	<0.0001
5-7	58.5		68.3	
8-10	66.0		98.0	
≥11	63.8		88.7	
OCCUPATION				
Non-manual	67.6	<0.0001	89.1	<0.0001
Manual	63.9		73.1	
Housewives	68.7		63.8	
Students	24.9		93.5	
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (minimum wage)				
0 - 1/4	72.0	<0.001	70.4	0.002
>1/4 - 1	58.5		82.1	
>1	77.2		90.6	
MIGRATION				
Natives	62.2	0.79	88.2	<0.0001
Migrants	63.0		61.6	
EMPLOYMENT STATUS				
Formal workers	51.8	<0.001	79.2	0.64
Informal workers	75.5		79.5	
Unemployed	54.9		84.4	
Inactive	64.4		79.5	

The effect of demographic and socioeconomic characteristics, employment status and migration on misclassification by the SRQ-20 was estimated and will be presented in section 4.3.5.

4.2.6. Reliability Study

Thirty six individuals were re-interviewed by the principal investigator at the health centres to check the consistency of the SRQ-20 dichotomized scores (positive and negative) when the screening was administered to the same person by a different interviewer. The agreement was 78%, kappa=0.42 (standard error=0.16) [Fleiss, 1987]. It is important to bear in mind that the interviews did not occur under the same conditions as one took place at household level and the other at health centres. The difference in time period should also be taken into account, as the mean gap between household interviews and re-interviews was 46 days (from 8 to 157 days).

4.3. ASSOCIATION BETWEEN EXPLANATORY VARIABLES AND COMMON MENTAL DISORDERS.

The analytic study consisted initially of an exploration of the association of each variable on CMD, followed by multivariate analysis to investigate the best socioeconomic status variables that independently differentiated between cases and non-cases of CMD and to look for any independent effect of employment status and migration in the CMD after adjusting for potential confounders. The SRQ-20 dichotomised scores (≤ 5 and ≥ 6) were taken as the dependent variable.

4.3.1. Demographic variables

4.3.1.1. Univariate analysis

Table 4.15 shows the association between demographic variables and CMD. Women were more likely to be a case then men (OR=3.18, 95% CI=2.2-4.6; p<0.0001). A trend was observed for age, older subjects had a higher probability of being a case (χ^2 for linear trend=12.46; p<0.001). As regard to marital status, single people had the lowest chance of being cases and separated and widowed the highest (OR=2.90; p<0.001).

Table 4.15 - *Distribution of CMD cases (N=216) by demographic variables, unadjusted odds-ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

VARIABLES	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
GENDER				
Male	55	20.7	1.00	$\chi^2_{(1)}$=42.25
Female	161	45.4	3.18 (2.2-4.6)	p<0.0001
AGE				
15-24	48	25.7	1.00	$\chi^2_{(1)}$=12.46*
25-54	122	36.1	1.64 (1.1-2.4)	p<0.001
≥55	46	47.9	2.66 (1.6-4.5)	
MARITAL STATUS				
Single	66	29.5	1.00	$\chi^2_{(2)}$=17.16
Married	104	33.2	1.19 (0.8-1.7)	p<0.001
Separated/widowed	46	54.8	2.90 (1.7-4.9)	

* Chi square for linear trend

4.3.2. Socioeconomic variables

4.3.2.1. Univariate analysis

Table 4.16 presents the distribution of CMD by socioeconomic variables. The prevalence of CMD was greater among those who were illiterate than among those who were literate (OR=2.71; p<0.001). A trend was observed for years of schooling, household monthly income and household *per capita* monthly income, less formal education and low income associated with higher probability of being a case (χ^2 for linear trend=34.97, 14.97 and 19.96; p <0.0001, p=0.0001 and p<0.0001, respectively). Occupation was also associated with CMD and housewives and manual workers presented a higher risk of being considered case than non-manuals workers and students.

Table 4.17 presents the distribution of CMD by house ownership and housing conditions. No significant differences were found in the relationship between CMD and house ownership and some aspects of housing conditions such as walls and roof materials. On the other hand, those living in houses that were less crowded and with a ceramic or wood floor and a flush inside toilet were significantly better off in terms of mental health. A statistically significant trend was found between CMD and housing conditions index (χ^2=8.71; p<0.01).

Table 4.16 - *Distribution of CMD cases (N=216) by socioeconomic variables, unadjusted odds-ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

VARIABLES	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
LITERACY				
Literate	181	32.4	1.00	$\chi^2_{(1)}$=13.53
Illiterate	35	56.4	2.71 (1.6-4.6)	p<0.001
EDUCATION (years)				
0-4	93	49.7	3.31 (2.1-5.3)	$\chi^2_{(1)}$=34.97*
5-7	63	38.4	2.09 (1.3-3.4)	p<0.0001
8-10	25	21.2	0.90 (0.5-1.6)	
≥11	35	23.0	1.00	
OCCUPATION[1]				
Non-manual	43	25.0	1.00	$\chi^2_{(3)}$=21.58
Manual	90	36.6	1.73 (1.1-2.7)	p=0.0001
Housewives	62	49.6	2.95 (1.8-4.8)	
Students	20	27.0	1.11 (0.6-2.0)	
HOUSEHOLD MONTHLY INCOME (minimum wage)[2]				
0 - 1	25	39.1	3.09 (1.4-7.0)	$\chi^2_{(1)}$=14.97*
>1 - 3	109	40.8	3.32 (1.7-6.6)	p=0.0001
>3 - 5	36	35.0	2.59 (1.2-5.6)	
>5 - 10	30	27.0	1.78 (0.8-3.9)	
> 10	11	17.2	1.00	
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (minimum wage)[2]				
0 - 1/4	39	55.7	3.88 (2.1-7.1)	$\chi^2_{(1)}$=19.96*
>1/4 - 1	136	34.7	1.64 (1.1-2.5)	p<0.0001
> 1	36	24.5	1.00	

* Chi square for linear trend
[1] 4 missing values
[2] 12 missing values

Table 4.17 - *Distribution of CMD cases (N=216) by house ownership and housing conditions, unadjusted odds-ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

VARIABLES	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
HOUSE OWNERSHIP				
Owned	179	35.5	1.00	$\chi^2_{(1)}$=0.64
Rented	37	31.6	0.84 (0.6-1.3)	p=0.42
HOUSING BUILDING MATERIAL				
WALLS				
Redbrick	194	34.0	1.00	$\chi^2_{(1)}$=1.66
Others	22	43.1	1.47 (0.8-2.6)	p=0.20
ROOF				
Tile/cement	159	33.3	1.00	$\chi^2_{(1)}$=1.88
Others	57	39.6	1.31 (0.9-1.9)	p=0.17
FLOOR				
Ceramic/wood	44	28.2	1.00	$\chi^2_{(1)}$=6.83*
Cement	157	36.0	1.43 (1.0-2.1)	p<0.01
Earth	15	51.7	2.73 (1.2-6.1)	
TOILET				
Flush inside	164	32.5	1.00	$\chi^2_{(1)}$=7.06*
Flush outside	29	40.3	1.40 (0.8-2.3)	p<0.01
Communal	23	51.1	2.17 (1.2-4.0)	
ROOM DENSITY (no. of people/room)[1]				
0.1 - 0.7	61	30.0	1.00	$\chi^2_{(1)}$=6.07*
0.71 - 0.9	46	31.1	1.05 (0.7-1.7)	p=0.01
≥1	108	40.2	1.56 (1.1-2.3)	
HOUSING CONDITION INDEX[1]				
High	25	30.9	1.00	$\chi^2_{(1)}$=8.71*
Medium	148	32.2	1.06 (0.6-1.8)	p<0.01
Low	42	53.2	2.54 (1.3-4.9)	

* Chi square for linear trend

[1] 1 missing value

Table 4.18 - *Distribution of CMD cases (N=216) by possessions of household appliances, unadjusted odds-ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

VARIABLES	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
FRIDGE				
Yes	183	34.5	1.00	$\chi^2_{(1)}$=0.16
No	33	36.7	1.10 (0.7-1.8)	p=0.69
TV				
Yes	195	34.8	1.00	$\chi^2_{(1)}$=0.00
No	21	34.4	0.98 (0.6-1.7)	p=0.95
STEREO SET				
Yes	163	36.3	1.00	$\chi^2_{(1)}$=1.67
No	53	30.8	0.78 (0.5-1.1)	p=0.20
TELEPHONE				
Yes	22	24.4	1.00	$\chi^2_{(1)}$=5.21
No	194	36.5	1.78 (1.1-3.0)	p=0.02
AIR CONDITIONING				
Yes	7	20.0	1.00	$\chi^2_{(1)}$=3.89
No	209	35.7	2.22 (0.9-5.2)	p=0.05
WASHING MACHINE				
Yes	13	21.7	1.00	$\chi^2_{(1)}$=5.40
No	203	36.2	2.05 (1.1-3.9)	p=0.02
CAR				
Yes	34	27.0	1.00	$\chi^2_{(1)}$=4.37
No	182	36.8	1.57 (1.0-2.4)	p=0.04
POSSESSIONS INDEX				
High	17	22.7	1.00	$\chi^2_{(2)}$=9.16
Medium	184	37.7	2.06 (1.2-3.7)	p=0.01
Low	15	25.9	1.19 (0.5-2.6)	

* Chi square for linear trend

Table 4.18 presents the association between possession of household appliances and CMD. No significant differences were found in the relationship between CMD and possession of a fridge, television and a stereo set. Subjects without a telephone, air conditioning or a washing machine were twice as likely to be a case than those with them (OR=1.78, p=0.02; OR=2.22, p=0.05; OR=2.05, p=0.02, respectively). Some of these calculations

were based on small numbers, as relatively few people owned some items. Individuals in the medium category for possession of home appliances had a higher probability of being a case (OR=2.06; p=0.01)

In order to examine if the association between socioeconomic variables and CMD was due to a confounding effect, the relationship between education (Table 4.19), family *per capita* monthly income (Table 4.20) and occupation (Table 4.21) with other socioeconomic and demographic variables were investigated. Cross-tabulations showed that socioeconomic variables were strongly associated, with the exception of house ownership. The proportion of illiteracy, manual workers, of low category for housing conditions and household appliances was higher among those with less years of schooling (Table 4.19)living in a low income household (Table 4.20). Manual workers (Table 4.21) possessed fewer household appliances and were more likely to be illiterate and to be living in lower housing conditions than non-manual workers.

Table 4.19 - *Demographic and socioeconomic characteristics according to education in years of schooling*

EDUCATION (years)	0-4	5-7	8-10	≥11	TEST OF SIGNIFICANCE
VARIABLES	n (%)	n (%)	n (%)	n (%)	
GENDER					
Male	71 (38.0)	86 (52.4)	52 (44.1)	57 (37.5)	$\chi^2_{(3)}$=9.83
Female	116 (62.0)	78 (47.6)	66 (55.9)	95 (62.5)	p=0.02
AGE					
15-24	30 (16.0)	66 (40.2)	51 (43.2)	40 (26.3)	$\chi^2_{(6)}$=112.86
25-54	88 (47.1)	87 (53.1)	59 (50.0)	104 (68.4)	p<0.0001
≥55	69 (36.9)	11 (6.7)	8 (6.8)	8 (5.26)	
MARITAL STATUS					
Single	42 (22.5)	69 (42.1)	55 (46.6)	58 (38.2)	$\chi^2_{(6)}$=35.21
Married	103 (55.0)	74 (45.1)	55 (46.6)	81 (53.3)	p<0.0001
Separated/widowed	42 (22.5)	21 (12.8)	8 (6.8)	13 (8.5)	
LITERACY					
Literate	125 (66.8)	164 (100.0)	118 (100.0)	152 (100.0)	$\chi^2_{(3)}$=159.85
Illiterate	62 (33.2)	0	0	0	p<0.0001
OCCUPATION[1]					
Non-manual	17 (9.2)	24 (14.8)	32 (27.1)	99 (65.1)	$\chi^2_{(9)}$=200.32
Manual	107 (57.8)	78 (48.1)	36 (30.5)	25 (16.5)	p<0.0001
Housewives	54 (29.2)	28 (17.3)	22 (18.7)	21 (13.8)	
Students	7 (3.8)	32 (19.8)	28 (23.7)	7 (4.6)	
INCOME *PER CAPITA* (in minimum wage)[2]					
0 - 1/4	34 (18.3)	24 (15.0)	7 (6.1)	5 (3.3)	$\chi^2_{(6)}$=99.74
>1/4 - 1	130 (69.9)	116 (72.5)	79 (69.3)	67 (45.0)	p<0.0001
>1	22 (11.8)	20 (12.5)	28 (24.6)	77 (51.7)	
HOUSE OWNERSHIP					
Owned	160 (85.6)	126 (76.8)	94 (79.7)	124 (81.6)	$\chi^2_{(3)}$=4.57
Rented	27 (14.4)	38 (23.2)	24 (20.3)	28 (18.4)	p=0.21
HOUSING CONDITION INDEX [3]					
Low	42 (22.6)	28 (17.1)	6 (5.1)	3 (2.0)	$\chi^2_{(6)}$=66.46
Medium	128 (68.8)	125 (76.2)	98 (83.0)	109 (71.7)	p<0.0001
High	16 (8.6)	11 (6.7)	14 (11.9)	40 (26.3)	
POSSESSIONS INDEX					
Low	29 (15.5)	19 (11.6)	6 (5.1)	4 (2.6)	$\chi^2_{(6)}$=70.35
Medium	147 (78.6)	137 (83.5)	100 (84.7)	104 (68.4)	p<0.0001
High	11 (5.9)	8 (4.9)	12 (10.2)	44 (29.0)	

[1] 4 missing values
[2] 12 missing values
[3] 1 missing value

Table 4.20 - *Demographic and socioeconomic characteristics according to household per capita monthly income in minimum wage*

INCOME (minimum wage)[1]	0-1/4	>1/4-1	>1	TEST OF SIGNIFICANCE
VARIABLES	n (%)	n (%)	n (%)	
GENDER				
Male	28 (40.0)	174 (44.4)	64 (43.5)	$\chi^2_{(2)}$=0.47
Female	42 (60.0)	218 (55.6)	83 (56.5)	p=0.79
AGE				
15-24	24 (34.3)	118 (30.1)	39 (26.6)	$\chi^2_{(4)}$=5.52
25-54	40 (57.1)	214 (54.6)	78 (53.1)	p=0.24
≥55	6 (8.6)	60 (15.3)	30 (20.4)	
MARITAL STATUS				
Single	52 (35.4)	140 (35.7)	28 (40.0)	$\chi^2_{(4)}$=4.49
Married	80 (54.4)	197 (50.3)	29 (41.4)	p=0.34
Separated/widowed	15 (10.2)	55 (14.0)	13 (18.6)	
LITERACY				
Literate	59 (84.3)	347 (88.5)	141 (95.9)	$\chi^2_{(2)}$=9.05
Illiterate	11 (15.7)	45 (11.5)	6 (4.1)	p=0.01
OCCUPATION [2]				
Non-manual	8 (11.8)	88 (22.6)	75 (51.0)	$\chi^2_{(6)}$=54.49
Manual	33 (48.5)	173 (44.4)	37 (25.2)	p<0.0001
Housewives	15 (22.1)	82 (21.0)	23 (15.6)	
Students	12 (17.6)	47 (12.0)	12 (8.2)	
HOUSE OWNERSHIP				
Owned	56 (80.0)	316 (80.6)	123 (83.7)	$\chi^2_{(2)}$=0.74
Rented	14 (20.0)	76 (19.4)	24 (16.3)	p=0.69
HOUSING CONDITION INDEX [3]				
Low	27 (39.1)	51 (13.0)	0	$\chi^2_{(4)}$=136.24
Medium	42 (60.9)	313 (79.9)	95 (64.6)	p<0.0001
High	0	28 (7.1)	52 (35.4)	
POSSESSIONS INDEX				
Low	6 (8.6)	51 (13.0)	0	$\chi^2_{(4)}$=164.19
Medium	64 (91.4)	327 (83.4)	86 (58.6)	p<0.0001
High	0	14 (3.6)	61 (41.5)	

[1] 12 missing values
[2] 4 missing values
[3] 1 missing value

Table 4.21 - *Demographic and socioeconomic characteristics according to occupation*

OCCUPATION [1]	Non-Manual	Manual	Housewives	Students	TEST OF SIGNIFICANCE
VARIABLES	n (%)	n (%)	n (%)	n (%)	
GENDER					
Male	82 (47.7)	149 (60.6)	0	31 (41.9)	$\chi^2_{(3)}$=127.18
Female	90 (52.3)	97 (39.4)	125 (100.0)	43 (58.1)	p<0.0001
AGE					
15-24	36 (20.9)	54 (22.0)	22 (17.6)	73 (98.6)	$\chi^2_{(6)}$=200.84
25-54	118 (68.6)	145 (58.9)	73 (58.4)	1 (1.4)	p<0.0001
≥55	18 (10.5)	47 (19.1)	30 (24.0)	0	
MARITAL STATUS					
Single	56 (32.5)	80 (32.5)	15 (12.0)	70 (94.6)	$\chi^2_{(6)}$=147.67
Married	98 (57.0)	128 (52.0)	83 (66.4)	3 (4.0)	p<0.0001
Separated/widowed	18 (10.5)	38 (15.5)	27 (21.6)	1 (1.4)	
LITERACY					
Literate	169 (98.3)	210 (85.4)	104 (83.2)	73 (98.6)	$\chi^2_{(3)}$=31.78
Illiterate	3 (1.7)	36 (14.6)	21 (16.8)	1 (1.4)	p<0.0001
HOUSE OWNERSHIP					
Owned	141 (82.0)	192 (78.0)	102 (81.6)	65 (87.8)	$\chi^2_{(3)}$=3.78
Rented	31 (18.0)	54 (22.0)	23 (18.4)	9 (12.2)	p=0.29
HOUSING CONDITION INDEX [2]					
Low	4 (2.3)	45 (18.3)	13 (10.5)	16 (21.6)	$\chi^2_{(6)}$=37.06
Medium	133 (77.3)	179 (72.8)	95 (76.6)	50 (67.6)	p<0.0001
High	35 (20.4)	22 (8.9)	16 (12.9)	8 (10.8)	
POSSESSIONS INDEX					
Low	10 (5.8)	33 (13.4)	8 (5.4)	6 (8.1)	$\chi^2_{(6)}$=48.54
Medium	120 (69.8)	205 (83.3)	103 (82.4)	57 (77.0)	p<0.0001
High	42 (24.4)	8 (3.3)	14 (11.2)	11 (14.9)	

[1] 4 missing values
[2] 1 missing value

4.3.2.2. Multivariate analysis

Logistic regression was used to investigate the best socioeconomic status variables that were independently associated with CMD. This analysis was carried out with the 604 subjects who had complete data on all variables included in the model.

Table 4.22 shows the unadjusted odds ratios for CMD by each socioeconomic variable and adjusted odds ratios for one another and for the effects of gender, age and marital status as potential confounders. The model was highly statistically significant ($p<0.0001$). The apparent effect of literacy, occupation and possessions of household appliances on CMD showed in the univariate analysis was confounded by education and household *per capita* monthly income and ceased to reach statistical significance. The adjusted odds ratios for housing conditions became smaller and borderline significant. As in the univariate analysis, the association between house ownership and CMD was not significant after adjustment for confounders. Education and household *per capita* monthly income were independently associated with the prevalence of CMD after adjustment for other socioeconomic variables, gender, age and marital status.

The existence of a dose-response relationship, or trend, provides more convincing evidence of a causal effect of exposure than a single comparison of exposed with unexposed subjects [Clayton and Hills, 1993]. Although the association between years of schooling and CMD seemed to be non-linear: exposed (0-4 and 5-7 years, respectively ORs=2.47 and 2.37) and unexposed (8-10 and ≥11, ORs 1.08 and 1.00), the null hypothesis test that the effects of education and household *per capita* monthly income were described by a linear trend was conducted. Likelihood ratio tests indicated that there is no evidence that the relationship between education ($LRS\chi^2=2.58$ $p=0.28$) and

household *per capita* monthly income ($LRS\chi^2$=0.02 p=0.89) and CMD was not linear. The simplest departure from a linear relationship is a quadratic relationship [Clayton and Hills, 1993]. An additional quadratic term was introduced in the logistic regression model and the null hypothesis test that the effects of education and household *per capita* monthly income were described by a linear trend was conducted. Likelihood ratio statistic and p-values calculated on removing the quadratic term from the model (education on CMD, $LRS\chi^2$=0.12 p=0.73; *per capita* income on CMD, $LRS\chi^2$=0.02 p=0.89) demonstrated that there is no evidence to support a non-linear trend.

In summary, from this analysis, education and household *per capita* monthly income seem to be the best socioeconomic status variables that independently predict being a case of CMD in this sample. Also, there is no evidence to reject a dose-response relationship between them and CMD.

Table 4.22 - *Unadjusted and adjusted odds ratios (OR) for being a case of CMD by socioeconomic variables, confidence intervals(95% CI) and likelihood ratio statistics (LRS)*

VARIABLES	UNADJUSTED OR	ADJUSTED OR[1]	LRS χ^2	p-value
GENDER				
Male	1.00	1.00		
Female	3.18	3.53 (2.2-5.6)	31.06	<0.0001
AGE				
15-24	1.00	1.00		
25-54	1.64	1.62 (0.9-3.0)		
≥55	2.66	1.92 (0.8-4.8)	3.36	0.19
MARITAL STATUS				
Single	1.00	1.00		
Married	1.19	0.78 (0.4-1.3)		
Separated/widowed	2.90	0.95 (0.4-2.1)	1.17	0.56
LITERACY				
Literate	1.00	1.00		
Illiterate	2.71	1.47 (0.8-2.8)	1.28	0.26
EDUCATION (years)				
0-4	3.31	2.47 (1.2-5.2)	10.37*	0.001
5-7	2.09	2.37 (1.3-4.4)		
8-10	0.90	1.08 (0.5-2.2)		
≥11	1.00	1.00		
OCCUPATION				
Non-manual	1.00	1.00		
Manual	1.73	1.03 (0.6-1.8)		
Housewives	2.95	0.95 (0.5-1.7)		
Students	1.11	0.73 (0.3-1.7)	0.75	0.86
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (minimum wage)				
0 - 1/4	3.88	2.36 (1.0-5.6)	5.21*	0.02
>1/4 - 1	1.64	1.29 (0.7-2.3)		
>1	1.00	1.00		
HOUSE OWNERSHIP				
Owned	1.00	1.00		
Rented	0.84	0.80 (0.5-1.3)	0.74	0.39
HOUSING CONDITION INDEX				
High	1.00	1.00		
Median	1.06	0.72 (0.4-1.4)		
Low	2.54	1.32 (0.6-2.9)	4.98	0.08
POSSESSIONS INDEX				
High	1.00	1.00		
Median	2.06	1.33 (0.6-3.1)		
Low	1.19	0.74 (0.2-2.2)	3.53	0.17

[1] Adjusted for the other variables in the table

* Likelihood ratio statistics for trend

4.3.3. Employment Status

4.3.3.1. Univariate analysis

Males and females play different roles in society and only females were classified as housewives. However, we shall present separate models for males and females throughout this analysis. Table 4.23 presents the distribution of CMD case by employment status and gender. Formal workers (employers and employees) showed significantly better mental health (χ^2=22.95, p<0.0001) when compared to informal (self-employed and underemployed) (OR=2.09) unemployed (OR=2.12) and inactive (students, housewives and retired) (OR=2.97) in the whole sample, though this was less clear for males. Examination of the odds ratios suggests that the modifying effect of gender, if it exists, was to make the association between employment status and CMD stronger among females. To decide whether these differences were greater than might be expected to occur by chance, the null hypothesis that the odds ratios in all strata were equal (proportional odds assumption), was tested against the alternative hypothesis that the odds ratios were not all equal. Although the actual pattern of the odds ratios seemed to be different, there was not evidence of effect modification (χ^2=4.63, 3 degrees of freedom, p=0.20). It is important to say that "the test for interaction has low power, ie. it is unlikely to yield a significant result even in the face of interaction. Non-significant results should not be interpreted as establishing the absence of interaction" [Statistical Methods in Epidemiology handbook, 1996, p.9.7].

Table 4.23 - *Distribution of CMD cases (N=216) by employment status and gender, unadjusted odds ratios (OR), confidence intervals (95% CI) and test of significance (degrees of freedom)*

EMPLOYMENT STATUS	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
Whole sample				
Formal workers	33	20.7	1.00	$\chi^2_{(3)}$=22.95
Informal workers	52	35.4	2.09 (1.3-3.5)	p<0.0001
Unemployed	30	35.7	2.12 (1.3-3.6)	
Inactive	101	43.7	2.97 (1.8-4.8)	
Females				
Formal workers	16	25.8	1.00	$\chi^2_{(4)}$=13.17
Informal workers	37	54.4	3.43 (1.6-7.2)	p=0.01
Unemployed	19	45.2	2.37 (1.1-5.0)	
Housewives	61	49.2	2.78 (1.4-5.4)	
Inactive	28	47.5	2.60 (1.2-5.8)	
Males				
Formal workers	17	17.5	1.00	$\chi^2_{(3)}$=2.01
Informal workers	15	19.0	1.10 (0.5-2.3)	p=0.57
Unemployed	11	26.2	1.67 (0.8-3.5)	
Inactive	12	25.0	1.57 (0.7-3.6)	

LRS χ^2=4.63, 3df, p=0.20 (test for effect modification)

Paid workers were analyzed separately according to hours of work (Table 4.24). The prevalence of CMD was 27% (44% among females and 19% among males) in full-time compared to 31% (36% in females and 20% in males) in part-time workers. As the difference did not reach statistical significance, for the remainder of the analysis paid workers were grouped as formal and informal without taking into account whether in full or part-time jobs.

Table 4.24 - *Distribution of CMD cases (N=83) among paid workers by hours of work and gender, unadjusted odds ratios (OR), confidence intervals (95% CI) and test of significance (degrees of freedom)*

HOURS OF WORK	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
Whole sample				
Full-time	62	27.3	1.00	$\chi^2_{(1)}$=0.41
Part-time	21	31.3	1.21 (0.7-2.1)	p=0.52
Females				
Full-time	34	43.6	1.00	$\chi^2_{(1)}$=0.67
Part-time	17	36.2	0.73 (0.4-1.5)	p=0.41
Males				
Full-time	28	18.8	1.00	$\chi^2_{(1)}$=0.02
Part-time	4	20.0	1.08 (0.3-3.5)	p=0.90

In order to investigate whether the association between employment status and CMD was due to a confounding effect of demographic and socioeconomic variables, the relationship between them and employment status was examined.

Table 4.25 presents the distribution of demographic variables among different categories of employment status and gender. All demographic variables showed an association with employment status and unemployed tended to be younger and more likely to be single and natives from the RMR than the others in the sample.

Table 4.26 displays the distribution of socioeconomic characteristics by employment status and gender. Informal workers and unemployed were less educated and more likely to be a manual worker than those placed formally in the labour market. Formal workers had better income situation, with only few of them in the lowest income group and were

slightly better than others in relation to their housing conditions. In summary, though this study was carried out in a low income population, formal workers were, on the whole, better off in terms of socioeconomic status.

4.3.3.2 - Multivariate analysis

Table 4.27 shows the changes observed in the odds-ratio between employment status and CMD after adjustment for potential confounders, according to different models. To obtain sufficient numbers in each cell, demographic and socioeconomic variables were combined into 2 categories as follow: age: 15-24 and ≥ 25; marital status: single and other; education: 0-7 and ≥ 8; income 0-1 and > 1; housing condition: low/medium and high. Occupation was excluded from the models due to many empty cells.

Adjustment for demographic and socioeconomic variables showed that small changes only took place in the association between employment status and CMD. The odds ratios for informal workers and unemployed were even higher when gender and age (in the whole sample and age for the remainder) were included in the models. In contrast, the adjusted odds ratios became smaller after including socioeconomic variables in the models.As in the univariate analysis, the effect of unemployment and informal work was stronger among females than among males, though, the interaction term added to the final logistic regression model was not statistically significant (χ^2=2.92, 3 degrees of freedom, p=0.40).

In summary, employment status was independently associated with CMD after adjustment for demographic and socioeconomic variables among females (χ^2=9.30, p=0.05), but not among males (χ^2=2.02, p=0.57).

Table 4.25 - *Demographic characteristics by employment status and gender*

	MALES				FEMALES				
EMPLOYMENT	**Formal**	**Informal**	**Unemployed**	**Inactive**	**Formal**	**Informal**	**Unemployed**	**Housewife**	**Inactive**
VARIABLES	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
AGE									
15-24	15 (15.5)	20 (25.3)	20 (47.6)	29 (60.4)	10 (16.1)	15 (22.1)	16 (38.1)	22 (17.7)	40 (67.8)
25-54	74 (76.3)	49 (62.0)	21 (50.0)	5 (10.4)	47 (75.8)	43 (63.2)	24 (57.1)	72 (58.1)	3 (5.1)
≥55	8 (8.2)	10 (12.6)	1 (2.4)	14 (29.2)	5 (8.1)	10 (14.7)	2 (4.8)	30 (24.2)	16 (27.1)
χ^2	66.36				88.90				
p	<0.0001				<0.0001				
MARITAL STATUS									
Single	26 (26.8)	27 (34.2)	26 (61.9)	30 (62.5)	22 (35.5)	17 (25.0)	21 (50.0)	15 (12.1)	40 (67.8)
Married	69 (71.1)	47 (59.5)	14 (33.3)	16 (33.3)	31 (50.0)	35 (51.5)	12 (28.6)	82 (66.1)	7 (11.9)
Widowed/Separated	2 (2.1)	5 (6.3)	2 (4.8)	2 (4.2)	9 (14.5)	16 (23.5)	9 (21.4)	27 (21.8)	12 (20.3)
χ^2	30.12				74.01				
p	<0.0001				<0.0001				
MIGRATION									
Native	72 (74.2)	60 (75.9)	37 (88.1)	35 (72.9)	39 (62.9)	42 (61.8)	36 (85.7)	74 (59.7)	38 (64.4)
Migrant	25(25.8)	19 (24.0)	5 (11.9)	13 (27.1)	23 (37.1)	26 (38.2)	6 (14.3)	50 (40.3)	21 (35.6)
χ^2	3.79				9.81				
p	0.28				0.04				

Table 4.26 - *Socioeconomic characteristics by employment status* and gender

	MALES				FEMALES				
EMPLOYMENT	**Formal**	**Informal**	**Unemployed**	**Inactive**	**Formal**	**Informal**	**Unemployed**	**Housewife**	**Inactive**
VARIABLES	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
EDUCATION (years)									
0-4	20 (20.6)	24 (30.4)	10 (23.8)	17 (35.4)	7 (11.3)	31 (45.6)	11 (26.2)	53 (42.7)	14 (23.7)
5-7	30 (30.9)	25 (31.7)	15 (35.7)	16 (33.3)	10 (16.1)	11 (16.2)	8 (19.1)	28 (22.6)	21 (35.6)
8-10	16 (16.5)	14 (17.7)	10 (23.8)	12 (25.0)	9 (14.5)	7 (10.3)	9 (21.4)	22 (17.7)	19 (32.2)
≥11	31 (32.0)	16 (20.2)	7 (16.7)	3 (6.3)	36 (58.1)	19 (27.9)	14 (33.3)	21 (17.0)	5 (8.5)
χ^2	15.87				69.59				
p	0.07				<0.0001				
OCCUPATION[1]									
Manual	49 (50.5)	55 (69.6)	28 (71.8)	17 (33.2)	21 (33.9)	42 (61.8)	21 (50.0)	0	13 (22.0)
Non-manual	48 (48.5)	24 (30.4)	9 (23.1)	1 (2.1)	41 (66.1)	26 (38.2)	18 (42.9)	0	5 (8.5)
Other	0	0	2 (5.1)*	29 (61.7)	0	0	3 (7.1)*	124 (100)	41 (69.5)
χ^2	153.00				315.82				
p	<0.0001				<0.0001				
INCOME *PER CAPITA* (in MW)[2]									
0 - 1/4	3 (3.1)	8 (10.1)	13 (30.9)	4 (8.3)	0	8 (12.1)	8 (19.1)	15 (12.6)	11 (19.9)
>1/4 - 1	61 (62.9)	55 (69.6)	23 (54.8)	35 (72.9)	33 (55.0)	47 (71.2)	25 (59.5)	81 (68.1)	32 (57.1)
>1	33 (34.0)	16 (20.3)	6 (14.3)	9 (18.8)	27 (45.0)	11 (16.7)	9 (21.4)	23 (19.3)	13 (23.2)
χ^2	30.13				27.20				
p	<0.0001				0.001				
HOUSING CONDITION INDEX[3]									
Low	13 (13.4)	7 (8.9)	9 (21.4)	7 (14.6)	2 (3.2)	15 (22.1)	4 (9.5)	12 (9.8)	10 (16.9)
Medium	68 (70.1)	63 (79.7)	31 (73.8)	35 (72.9)	49 (79.0)	44 (64.7)	35 (83.3)	95 (77.2)	40 (67.8)
High	16 (16.5)	9 (11.4)	2 (4.8)	6 (12.5)	11 (17.8)	9 (13.2)	3 (7.2)	16 (13.0)	9 (15.3)
χ^2	7.16				15.70				
p	0.31				0.05				

[1] 4 missing values [2] 12 missing value [3] 1 missing value * 4 students and 1 housewife without previous occupation

Table 4.27 - *Unadjusted and adjusted odds ratios(OR) for being a case of CMD by employment status and gender, confidence intervals (95% CI), likelihood ratio statistics (LRS) and p-values, according to different models*

EMPLOYMENT STATUS	Unadjusted OR	OR(95% CI)*	OR(95%CI)†	OR(95%CI)‡
Whole sample				
Formal workers	1.00	1.00	1.00	1.00
Informal workers	2.09	2.14 (1.3-3.6)	1.85 (1.1-3.2)	1.81 (1.0-3.2)
Unemployed	2.12	2.41 (1.3-4.3)	1.95 (1.1-3.4)	2.06 (1.1-3.7)
Inactive**	2.97	2.52 (1.4-4.4)	2.51 (1.5-4.1)	1.89 (1.0-3.4)
LRS χ^2	22.95	15.30	14.59	7.18
p-value	<0.0001	0.002	0.002	0.07
Females				
Formal workers	1.00	1.00	1.00	1.00
Informal workers	3.43	3.76 (1.7-8.1)	2.61 (1.2-5.9)	3.02 (1.3-7.2)
Unemployed	2.37	3.00 (1.3-6.8)	2.05 (0.9-4.5)	2.66 (1.1-6.3)
Housewives	2.78	2.90 (1.4-5.8)	1.95 (0.9-4.0)	2.29 (1.0-5.0)
Inactive	2.60	4.46 (1.8-10.8)	1.93 (0.8-4.5)	3.19 (1.2-8.4)
LRS χ^2	13.17	17.37	6.02	9.30
p-value	0.01	0.002	0.20	0.05
Males				
Formal workers	1.00	1.00	1.00	1.00
Informal workers	1.10	1.17 (0.5-2.5)	0.99 (0.5-2.2)	1.08 (0.5-2.4)
Unemployed	1.67	2.03 (0.9-4.6)	1.51 (0.7-3.1)	1.77 (0.8-3.9)
Inactive	1.57	2.07 (0.8-5.3)	1.31 (0.5-3.1)	1.62 (0.6-4.2)
LRS χ^2	2.01	3.79	1.14	2.02
p-value	0.57	0.28	0.77	0.57

* Adjusted by gender and age in the whole sample; for the remaining, adjusted by age.
† Adjusted by education, household *per* capita monthly income and housing conditions.
‡ Adjusted by all the preceding variables, marital status and migration.
**Housewives, students and retired. Among females, housewives were analyzed as a separated category.
LRS χ^2=2.92, 3df, p=0.40 (test for a gender effect in the association between employment status and CMD)

4.3.4. Migration

4.3.4.1. Univariate analysis

Migrants showed a higher prevalence of CMD (OR=1.78, 95% CI 1.2-2.5; p=0.001) than the native population. The prevalence of CMD was also analyzed in relation to age when migration occurred (Table 4.28), for different periods since migration (Table 4.29), and according to the place of birth (Table 4.30).

Table 4.28 presents the distribution of CMD for age when migration occurred. Those who were between 10 and 20 years old by the time they left their place of birth were more likely to be a case than the others (OR=2.31, 95% CI 1.5-2.6; p=0.004).

Table 4.28 - *Distribution of CMD cases (N=216) by age when migration occurred*[1], *unadjusted odds-ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

AGE (in years)	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
Natives	133	30.7	1.00	$\chi^2_{(3)}$=13.21
< 10	18	38.3	1.40 (0.8-2.6)	p=0.004
10 - 20	46	50.6	2.31 (1.5-3.6)	
>20	18	38.3	1.40 (0.7-2.7)	

[1] 3 missing values

A trend was observed in the association between different periods since migration and CMD (OR=0.88, 1.88 and 2.02, respectively; χ^2 for linear trend=12.76; p<0.001) and those who had lived in the RMR for more than 20 years showed the highest probability of being considered a case (Table 4.29).

Table 4.29 - *Distribution of CMD cases (N=216) by different periods since migration[1], unadjusted odds-ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

PERIOD (in years)	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
Natives	133	30.7	1.00	$\chi^2_{(3)}$=12.76*
< 10	7	28.0	0.88 (0.4-2.2)	p<0.001
10 - 20	15	45.4	1.88 (0.8-4.3)	
>20	60	47.2	2.02 (1.3-3.0)	

[1] 3 missing values
* Chi square for linear trend

Table 4.30 presents the unadjusted odds-ratios for place of birth and CMD. The prevalence of CMD was higher in migrants from rural areas than in those from urban areas or natives from the RMR (OR=2.00; 95% CI 1.3-3.1; p=0.004).

Table 4.30 - *Distribution of CMD cases (N=216) by place of birth, unadjusted odds - ratios (OR), confidence intervals (95% CI), test of significance (degrees of freedom)*

PLACE OF BIRTH	n	%	OR (95% CI)	TEST OF SIGNIFICANCE
Natives	133	30.7	1.00	$\chi^2_{(2)}$=11.28
Urban area	28	39.4	1.47 (0.9-2.5)	p=0.004
Rural area	55	47.0	2.00 (1.3-3.1)	

Migrants were also analyzed separately (without using natives as baseline) and the results showed no significant difference between those born in urban areas compared to those from rural areas ($\chi^2_{(1)}$=1.03; p=0.31), according to different ages when migration occurred ($\chi^2_{(2)}$=2.82; p=0.24) and also related to different periods since migration (χ^2 for linear trend =2.62; p=0.11).

In order to investigate whether the association between migration and CMD was due to confounding variables, the relationship between demographic and socioeconomic variables and migration was examined. Table 4.31 presents the distribution of other demographic variables among migrants and natives. The proportion of females, elderly and separated/widowed was significantly higher among migrants than in non-migrants (67%, 33%, 19%, respectively).

Table 4.31 - *Distribution of demographic variables according to migration status.*

MIGRATION	NATIVES		MIGRANTS		TEST OF SIGNIFICANCE
VARIABLES	n	%	n	%	
GENDER					
Male	204	47.1	62	33.0	$\chi^2_{(1)}=10.69$
Female	229	52.9	126	67.0	p=0.001
AGE					
15-24	168	38.8	19	10.1	$\chi^2_{(2)}=92.86$
25-54	232	53.6	106	56.4	p<0.001
≥55	33	7.6	63	33.5	
MARITAL STATUS					
Single	187	43.2	37	19.7	$\chi^2_{(2)}=32.07$
Married	197	45.5	116	61.7	p<0.001
Separated/widowed	49	11.3	35	18.6	

Table 4.32 displays the distribution of socioeconomic characteristics between the two groups. Although migrants were less likely to have formal education than natives, non-migrants were more unemployed. No significant differences were found according to migration status for household *per capita* monthly income and housing conditions.

Table 4.32 - *Distribution of socioeconomic characteristics according to migration status*

MIGRATION	NATIVES		MIGRANTS		TEST OF SIGNIFICANCE
VARIABLES	n	%	n	%	
EDUCATION (years)					
0-4	94	21.7	93	49.5	$\chi^2_{(3)}$=48.26
5-7	126	29.1	38	20.2	p<0.001
8-10	94	21.7	24	12.8	
≥11	119	27.5	33	17.5	
EMPLOYMENT STATUS					
Formal workers	110	26.1	47	25.7	$\chi^2_{(3)}$=17.22
Informal workers	101	24.0	44	24.0	p=0.001
Unemployed	71	16.9	10	5.5	
Inactive	139	33.0	82	44.8	
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (in MW)[1]					
0 - 1/4	51	12.0	19	10.3	$\chi^2_{(2)}$=2.39
>1/4 - 1	278	65.6	114	61.6	p=0.30
>1	95	22.4	52	22.1	
HOUSING CONDITION INDEX[2]					
Low	52	12.0	27	14.3	$\chi^2_{(2)}$=3.02
Medium	329	76.2	131	69.7	p=0.22
High	51	11.8	30	15.0	

[1] 12 missing values
[2] 1 missing value

4.3.4.2. Multivariate analysis

Table 4.33 shows the changes observed in the odds-ratio between migration and CMD after adjustment for potential confounders. All variables included in the model showed a confounding effect. After controlling for gender and age, the association between migration and CMD was markedly reduced and became statistically not significant (OR=1.28, 95% CI 0.9-1.9; p=0.22). The same pattern occurred after adjustment of the association with age at migration, different periods since migration and place of birth, taking natives as the baseline group.

Table 4.33 - *Unadjusted and adjusted odds ratios(OR) for being a case of CMD by migration, age when migration occurred, different periods since migration and place of birth, confidence interval (95% CI), likelihood ratio statistics (LRS) and p-values, according to different models*

VARIABLES	Unadjusted OR	OR(95% CI)[1]	OR(95%CI)[2]	OR(95%CI)[3]
MIGRATION				
Natives	1.00	1.00	1.00	1.00
Migrants	1.78	1.28 (0.9-1.9)	1.56 (1.1-2.3)	1.22 (0.8-1.9)
LRS χ^2	10.24	1.48	4.81	0.79
p-value	0.001	0.22	0.03	0.37
AGE (years)				
Natives	1.00	1.00	1.00	1.00
<10	1.40	1.03 (0.6-1.9)	1.40 (0.7-2.6)	1.01 (0.5-1.9)
10-20	2.31	1.64 (1.0-2.7)	1.95 (1.2-3.2)	1.58 (0.9-2.7)
>20	1.40	0.93 (0.4-2.0)	1.14 (0.5-2.3)	0.84 (0.4-1.9)
LRS χ^2	13.21	4.23	6.93	3.53
p-value	<0.01	0.24	0.07	0.32
PERIOD (years)				
Natives	1.00	1.00	1.00	1.00
<10	0.88	0.77 (0.3-2.1)	0.63 (0.2-1.9)	0.66 (0.2-2.0)
10-20	1.88	1.59 (0.7-3.6)	2.04 (0.9-4.8)	1.65 (0.7-3.9)
>20	2.02	1.36 (0.8-2.2)	1.77 (1.1-2.8)	1.30 (0.8-2.2)
LRS χ^2	12.76*	2.03*	6.89*	1.31*
p-value	<0.001	0.15	<0.01	0.25
PLACE OF BIRTH				
Natives	1.00	1.00	1.00	1.00
Urban	1.47	1.08 (0.6-1.9)	1.65 (0.9-2.9)	1.25 (0.6-2.4)
Rural	2.00	1.45 (0.9-2.4)	1.51 (0.9-2.4)	1.19 (0.7-2.0)
LRS χ^2	11.28	2.35	4.87	0.81
p-value	<0.01	0.31	0.09	0.67

[1] Adjusted by gender and age
[2] Adjusted by education, *per capita* monthly income, housing conditions and employment status
[3] Adjusted by all the preceding variables, marital status and the interaction between gender and employment
* Chi square for linear trend

In order to compare the effects of employment status in the association of migration and CMD to a recently study carried out in Brazil [Coutinho et al., 1996], the women were analyzed separately. Table 4.34 presents the changes in the odds-ratios between migration and CMD, only for women, according to the inclusion of other demographic and socioeconomic variables in the model. Similarly to what was observed for the whole sample, the association between migration and CMD completely disappeared when adjusted for confounding variables (OR=1.13, 95% CI 0.7-1.9; p=0.64).

Table 4.34 - *Unadjusted and adjusted odds ratios(OR) for being a case of CMD by migration, confidence interval (95% CI), likelihood ratio statistics (LRS) and p-values, according to different models (only for women)*

MIGRATION	Unadjusted OR	OR(95% CI)[1]	OR(95%CI)[2]	OR(95%CI)[3]
Natives	1.00	1.00	1.00	1.00
Migrants	1.55	1.23 (0.8-2.0)	1.35 (0.8-2.2)	1.13 (0.7-1.9)
LRS χ^2	3.49	0.70	1.38	0.20
p-value	0.05	0.40	0.24	0.66

[1] Adjusted by age
[2] Adjusted by education, *per capita* monthly income, housing conditions and employment status
[3] Adjusted by all the preceding variables and marital status

For Coutinho et al. [1996], the risk of CMD associated with migration was not present in women in paid jobs and housewives, but was very large and statistically significant among unemployed. His multivariate model identified the presence of a modification of the effect of migration on CMD in different strata of employment status. He used a different classification of employment status: paid jobs, housewives and unemployed. The following analysis will consider both: his and this study's classification of employment status. Table 4.35 displays the odds-ratios for migration and CMD in different strata of employment status according to Coutinho's classification.

Table 4.35 - *Distribution of CMD cases by migration stratified by employment status (Coutinho's classification), unadjusted and adjusted odds-ratio (OR), confidence intervals (95% CI), likelihood ratio statistics (LRS) and p-values (only women)*

MIGRATION	NATIVES		MIGRANTS		OR (95% CI)[1]	OR (95% CI)[2]
EMPLOYMENT STATUS	n	%	n	%	Unadjusted	Adjusted*
Paid Job	47	39.2	34	48.6	1.47 (0.8-2.6)	1.04 (0.5-2.1)
Unemployed	**14**	**38.9**	**5**	**83.3**	**7.86 (0.8-73.7)**	**3.47 (0.1-110.1)**
Housewives	34	46.6	27	54.0	1.35 (0.7-2.7)	1.05 (0.4-2.4)
SUMMARY					1.56 (1.0-2.4)	1.13 (0.7-1.9)
LRS χ^2, 1df					3.83	0.19
p-value					0.05	0.66

* Adjusted for age, marital status, education, *per capita* monthly income and housing conditions
[1] Unadjusted LRS χ^2=2.74, 2df, p=0.25 (testing for effect modification)
[2] Adjusted LRS χ^2=1.45, 2df, p=0.48 (testing for effect modification)

Table 4.36 presents the odds-ratios for migration and CMD in different strata of employment status according to this study's classification.

Table 4.36 - *Distribution of CMD cases by migration stratified by employment status (this study's classification), unadjusted and adjusted odds-ratio (OR), confidence intervals (95% CI), likelihood ratio statistics (LRS) and p-values (only women)*

MIGRATION	NATIVES		MIGRANTS		OR (95% CI)[1]	OR (95% CI)[2]
EMPLOYMENT STATUS	n	%	n	%	Unadjusted	Adjusted*
Formal workers	10	25.6	6	26.1	1.02 (0.3-3.3)	0.68 (0.1-3.2)
Informal workers	22	52.4	15	57.7	1.24 (0.5-3.3)	1.38 (0.3-5.4)
Unemployed	**14**	**38.9**	**5**	**83.3**	**7.86 (0.8-73.7)**	**3.47 (0.1-110.1)**
Inactive	49	43.7	40	56.3	1.66 (0.9-2.9)	1.12 (0.5-2.3)
SUMMARY					1.58 (1.0-2.5)	1.13 (0.7-1.9)
LRS χ^2, 1df					3.98	0.20
p-value					0.05	0.66

* Adjusted for age, marital status, education, *per capita* monthly income and housing conditions
[1] Unadjusted LRS χ^2=3.29, 3df, p=0.35 (testing for effect modification)
[2] Adjusted LRS χ^2=2.38, 3df, p=0.50 (testing for effect modification)

Although migrant unemployed women presented a higher odds ratio of CMD compared to other groups (OR=7.86, 95% CI 0.8-73.7) the difference was not significant. Furthermore, there was no evidence of interaction between the effects of migration and employment status on CMD (Unadjusted LRS=2.74, p=0.25 and Adjusted LRS=1.45, p=0.48 in Table 4.35 and Unadjusted LRS=3.29, p=0.35 and Adjusted LRS=2.38, p=0.50 in Table 4.36) and a summary odds ratio is presented in both tables (OR=1.56, 95% CI 1.0-2.4 and OR=1.58, 95% CI 1.0-2.5, respectively).

4.3.5. Investigating the effect of the misclassification by the SRQ-20

The effect of demographic and socioeconomic variables, employment and migration on misclassification by the SRQ-20 was assessed by calculating the Mantel-Haenszel summary estimate odds ratio of being a true positive among 'cases' and of being a false positive among 'non-cases'. For illustrative purposes, the association between gender and CMD, stratified by psychiatric interview is presented in Table 4.37.

Table 4.37 - *Association between gender and CMD, stratified by psychiatric interview*

	PSYCHIATRIC INTERVIEW			
	Positive		Negative	
	Females	Males	Females	Males
SRQ-20$^+$	115	22	66	14
SRQ-20$^-$	53	28	142	183
OR (95%CI)	2.77 (0.5-16.0)	1.00	6.26 (2.2-17.6)	1.00

LRS χ^2=0.90, 1df, p=0.34 (test for effect modification)

Although the association between female and CMD was stronger among false positive (OR=6.26, 95% CI 2.2-17.6) than among true positive (OR=2.77, 95% CI 0.5-16.0) there was no evidence of an interaction between gender and psychiatric interview on CMD (LRS χ^2=0.90, 1df, p=0.34) and a summary odds ratio is presented in Table 4.38.

Logistic regression was used to investigate the size of misclassification, adjusting the association between CMD, defined by the SRQ-20, and different variables for the psychiatric interview results, as presented in Table 4.38. In the univariate analysis, females, elderly, less educated, manual workers, housewives and migrants did tend to over-report complaints in the absence of symptoms. The apparent influence of age, education, occupation and migration on misclassification by the SRQ-20 was markedly reduced and became statistically non significant after adjustment for gender and for the other variables in the table. In contrast, the gender effect has not been altered after adjustment suggesting that over-reporting was related to gender rather than any of the other variables.

To examine whether misclassification could be a possible explanation for the socioeconomic gradients presented in Table 4.22, the multivariate analysis was repeated for males and females separately. The stratified analysis (appendix 4) showed an independent effect of low education among both males and females and of low income among males. Moreover, the association between CMD, socioeconomic status, employment and migration was investigated in the subsample from the validation study, using psychiatric definition of caseness. The results were in the same direction to the previous ones (see appendices 5 and 6).

Table 4.38 - *Adjusted odds ratio (OR), confidence intervals (95% CI) and p-values for being a true SRQ-20 positive among 'cases' and for being a false SRQ-20 positive among 'non-cases', according to demographic and socioeconomic variables, employment status and migration, using the Psychiatric Interview as criterion*

VARIABLES	Adjusted OR[1]	p-value	Adjusted OR[2]	p-value	Adjusted OR[3]	p-value
GENDER						
Male	1.00	<0.001			1.00	0.01
Female	4.33 (1.7-11.1)				4.15 (1.1-15.5)	
AGE						
15-24	1.00	0.04	1.00	0.13	1.00	0.09
25-54	1.51 (0.5-4.4)		1.59 (0.5-5.4)		0.37 (0.1-1.4)	
≥55	4.10 (1.0-17.1)		3.19 (0.7-13.8)		1.26 (0.2-7.6)	
EDUCATION (years)						
0-4	2.63 (0.8-8.6)	0.02	1.80 (0.5-6.4)	0.15	1.10 (0.1-9.3)	0.51
5-7	2.30 (0.6-8.1)		2.33 (0.6-8.4)		1.97 (0.2-15.5)	
8-10	0.55 (0.1-2.2)		0.65 (0.1-3.1)		0.62 (0.1-3.7)	
≥11	1.00		1.00		1.00	
OCCUPATION						
Non-manual	1.00	0.02	1.00	0.01	1.00	0.10
Manual	1.94 (0.7-5.2)		2.62 (0.8-8.2)		1.24 (0.2-6.9)	
Housewives	2.59 (0.8-8.8)		1.47 (0.4-6.0)		1.84 (0.2-13.6)	
Students	0.36 (0.1-1.6)		0.29 (0.0-1.9)		0.19 (0.0-2.0)	
***PER CAPITA* MONTHLY INCOME (minimum wage)**						
0 - 1/4	2.11 (0.5-8.2)	0.46	2.42 (0.6-9.3)	0.38	2.51 (0.5-13.6)	0.31
>1/4 - 1	1.06 (0.5-2.3)		1.23 (0.5-3.1)		0.95 (0.3-2.8)	
>1	1.00		1.00		1.00	
MIGRATION						
Natives	1.00	0.02	1.00	0.19	1.00	0.67
Migrants	2.35 (0.8-6.5)		1.65 (0.6-4.7)		1.24 (0.3-4.6)	
EMPLOYMENT STATUS						
Formal workers	1.00	0.79	1.00	0.64	1.00	0.48
Informal workers	1.38 (0.4-4.9)		1.11 (0.3-4.1)		2.37 (0.7-8.3)	
Unemployed	0.79 (0.2-3.6)		0.69 (0.2-3.0)		1.22 (0.3-5.4)	
Inactive	1.15 (0.3-4.1)		0.61 (0.1-2.8)		0.65 (0.1-4.6)	

[1] Adjusted for the psychiatric interview
[2] Adjusted for the psychiatric interview and gender
[3] Adjusted for the psychiatric interview and for the other variables in the table

CHAPTER 5 - DISCUSSION

The first part of this chapter concerns the main findings of this study. The second considers methodological limitations of the study design, biases, misclassification and confounding. This is followed by the discussion and comparison of this study's results with those from the literature reviewed. Finally, an attempt to aggregate the diverse determinants of CMD in a causal hierarchy is presented.

5.1 - MAIN FINDINGS

Socioeconomic status

In the present study, SES was assessed in relation to literacy, years of schooling, own occupation, income distribution, ownership of the house, housing conditions and possession of household appliances. Prior to adjustment, statistically significant

associations were found between CMD and all SES variables, except housing tenure. After adjustment for all measures of SES, gender, age and marital status, only less education and low household *per capita* monthly income were independently associated with the prevalence of CMD. There was a statistically significant trend in the association between years of schooling (χ^2=10.37, df=1, p<0.0001) and income (χ^2=5.21, df=1, p=0.02), which did not depart significantly from linearity (LRSχ^2=2.58, df=2, p=0.28 and LRSχ^2=0.02, df=1, p=0.89, respectively).

Employment status

Unemployment and informal work were associated with CMD for the whole sample in the univariate analysis. After adjustment for gender, age, marital status, migration, education, household *per capita* monthly income and housing conditions, the odds ratios became smaller and of borderline significance (ORs 1.81, 95% CI 1.0-3.2 and 2.06, 95% CI 1.1-3.7, respectively). The association between unemployment and CMD for males (OR=1.77, 95% CI 0.8-3.9) was in the same direction as that found for females (OR=2.66, 95% CI 1.1-6.3), but non significant. In contrast to this, while females working in the informal sector were more likely to be a case of CMD than formal workers (OR=3.02, 95% CI 1.3-7.2), no difference was found for informally placed males (OR=1.08, 95% CI 0.5-2.4). More specifically, the association between informal work and CMD appears to be absent in males, though the interaction between employment status and gender was not significant (χ^2=2.92, 3 degrees of freedom, p=0.40)

Migration

In the univariate analysis, migrants showed a higher prevalence of CMD than the native population. After controlling for gender and age, the association between migration and CMD was markedly reduced (OR=1.28, 95% CI 0.9-1.9) and became statistically non significant.

5.2 - METHODOLOGICAL LIMITATIONS

This section provides an overview of the methodological limitations of the study that will be presented in detail in section 5.3. The study design and the roles of chance, bias and confounding are discussed in turn.

5.2.1 - Limits of the study design

The prevalence of psychiatric morbidity is determined jointly by incidence, duration and relapse rates [Sargeant et al.,1990; Weich and Lewis, in press]. Since these findings are based on cross-sectional data, it is not possible to distinguish between factors associated with increased incidence of disorder, those associated with increased duration of episodes, and those which are the consequence of CMD (reverse causality). The latter is particularly difficult to exclude as an explanation for the findings, since the natural history of CMD is often one of relapse and remission over many years [Weich and Lewis, in press].

5.2.2 - The role of chance

The use of appropriate statistical tests and estimates of effect size make it unlikely that the main findings can be explained by chance. Although multiple tests of statistical significance were conducted, these were based on the literature and set up in the light of well-known determinants of CMD in the community. Furthermore, the very large proportion of results which were significant at or below 0.1% level of confidence ($p \leq 0.0001$ for most of the univariate associations and for being female and having a low education in the multivariate analysis) argues strongly against Type I error. However, there is a possibility that the unemployment effect among men was attenuated due to type II error. The size of the study population was a particular limitation in the assessment of effect modification.

Individuals in this study were not sampled randomly because everyone in a household was interviewed. The clustering in household could have resulted in a substantial increase in the standard error of the prevalence estimates [Jenkins et al., 1997]. Huber's regression was used to produce robust confidence standard errors [Huber, 1967]. Estimated coefficients were unchanged. The standard errors did increase, but only marginally.

5.2.3 - The role of Bias

Interpreting any study results always requires evaluating the role of bias as a possible alternative explanation for the observed associations. Bias is a systematic error introduced in a study that may lead to incorrect estimates of the association under investigation and

can be classified in two main categories: selection bias and measurement or information bias [Hennekens and Buring, 1987].

5.2.3.1 - Selection bias

To reduce selection bias, a careful design of the sampling procedure was carried out. The households were selected at random based on a detailed and updated list of households, ensuring that each household in the study area had an equal probability of being chosen for interview. Repeat visits were made to selected households. The non-response rate was low (9%) and the sample was representative of Olinda's population, based on the 1991 Census, with regard to age and gender distribution.

Non-participation is a potential source of bias in cross-sectional studies if the reason for being enrolled in the study is associated with both the exposure status and the outcome of interest. Therefore, selection bias might have occurred if subjects were selected on the basis of being at home at the time of the first approach for interview. Men and people in the productive age range (25-54) are less likely to be at home during the day. To explain the results, there would have had to have been a selected non-response of depressed higher educated, employed or higher income people. Though information on years of schooling and employment status was not collected in non-respondents, only small differences were found related to the income of respondents and non-respondents.

It is possible that bigger socioeconomic differences on CMD would be found if wealthier areas in the city had been included in this study. The majority of the sample belonged to a low socioeconomic status and factors conceivably responsible for CMD in the Olinda population as a whole (occupation, house ownership, housing conditions and possession

of household appliances) were not sufficiently varied among individuals within the study area.

5.2.3.2 - Measurement or information bias

Measurement or information bias includes any systematic difference in the way data on exposure or outcome are obtained from the various study groups [Hennekens and Buring, 1987].

Misclassification of explanatory variables

The great attention to detail in the questionnaire design and in the use of trained field workers argues against significant misclassification of socioeconomic exposures, employment status and migration. To avoid their interference in the interviews (observer bias), the study personnel (interviewers and psychiatrists) were blind to the main objectives of the study and to the SRQ-20 scores when applying the socioeconomic questionnaire or determining mental status.

Two approaches were used to ensure the reliability of the information reported: internal consistency and comparison of different sources for the same information. Questions about migration, number of people living together, family income, housing conditions and possessions of household appliances were asked to everyone living in the household and the answers were compared. Where discrepancies were found, repeat visits were made until a consensus was reached. In this way it was possible to minimize errors related to

some information for example income, which might be inaccurate. Although recall bias might have led to an over-estimate of the association between CMD and low income (in that depressed individuals may exaggerate the adversity of current circumstances), this could not explain, by itself, the association with less years of schooling because education is less liable to recall bias. Furthermore, it is unlikely that a whole household would over-report a financial problem.

Misclassification of outcome

Of particular concern was the possibility of misclassification of the study outcome. Thirty six individuals were re-interviewed by the principal investigator at the health centres to check the consistency of the SRQ-20 dichotomized scores (positive and negative) when the screening test was administered to the same person by a different interviewer. Additionally, a validation study was performed in which the SRQ-20 results were compared with an interview administered by a psychiatrist. There was a considerable variation between the two SRQ-20 assessments (kappa=0.42, standard error=0.16) and between the SRQ-20 assessment and the psychiatric interview (kappa 0.43, standard error=0.04). These results are consistent with those obtained by Wing et al.[1977] and Sturt et al.[1981] reporting an enormous disagreement in re-interviewing studies. Some of this disagreement may be due to variations in the methods used to assess CMD and in interviewing style but changes in subjects' mental state were also possible as there was often a considerable delay between the first and the second SRQ-20 assessment and between the first SRQ-20 assessment and the psychiatric interview. According to Lewis et al. [1992], the classification of CMD is notoriously difficult: even when a subject is

interviewed by one psychiatrist and then minutes later re-interviewed by a second psychiatrist (using the same instrument) the results frequently differ to a substantial degree.

It has been noted that females and poorly educated people may over-report psychiatric complaints on the GHQ-12 and the SRQ-20, compared with responses to a standardized psychiatric interview administered by a clinician in Latin American studies [Mari and Williams, 1986; Araya et al., 1992]. This means that females and low-educated people are more likely to report complaints in the absence of symptoms. The effect of this bias would have been that the rates of CMD found in this study in females and less educated people were over-estimated. In fact, females, elderly, lower educated, housewives, migrants and those with the lowest income did tend to over-report on the SRQ-20 (Table 4.14). However, the apparent influence of age, education, occupation and migration on misclassification by the SRQ-20 was markedly reduced and became statistically non significant after adjustment for gender suggesting that over-reporting was related to gender rather than any of the other factors (Table 4.38).

It is unlikely that the female over-reporting could entirely account for the social differences found in this study, since in the multivariate analysis to assess the association between CMD, SES, employment and migration all models were adjusted for gender. Furthermore, the analysis stratified by gender showed an independent effect of low education among males and females, of low income among males (appendix 4) and of unemployment and informal work among females (Table 4.27). The association between migration and CMD among females was in the same direction as the one found for the

whole sample (Table 4.34). In addition, the results from the analyses performed in the subsample from the validation study (appendices 5 and 6), using psychiatric definition of caseness, were similar to the original ones.

5.2.4 - The role of confounding

Confounding may be considered as a mixing of effects between the exposure, the outcome of interest and a third factor that is associated with both the exposure and the risk of developing the outcome of interest without implying causality [Rothman, 1986; Hennekens and Buring, 1987]. The identification of potential confounders is of major importance since they distort the apparent relationship between the exposure and outcome, making the relationship appear stronger or weaker than it really is.

One of the strengths of this study was the collection of information on a large number of demographic and socioeconomic variables which are likely to be associated with the prevalence of CMD. Logistic regression was used to monitor changes in the odds ratios corresponding to different sets of potential confounders. Socioeconomic variables were strongly associated with each other and the apparent association between illiteracy, occupation, housing conditions and household appliances with CMD was confounded by education and household *per capita* monthly income. After controlling for gender and age, the association between migration and CMD was markedly reduced and became statistically non significant because migrants were more likely to be females and older than the native population.

The possibility cannot be excluded, however, that the differences in the prevalence of CMD may have been confounded by unknown factors. Moreover, longstanding or disabling condition, which have been found to be associated with unemployment, early retirement [Bartley and Owen, 1996] and CMD [Bartley et al., 1992], were not considered in this study. Personality disorder in childhood [Rutter, 1972] and behavioural/ psychological problems in adolescence [Power et al., 1991], which are likely to be associated with the prevalence of CMD, might also have affected schooling but were not considered.

5.3 - DISCUSSION AND COMPARISON OF THE PRESENT FINDINGS WITH THOSE FROM THE LITERATURE REVIEWED

The association between social class and CMD has been the subject of numerous studies in different societies. However, the results obtained so far have been conflicting. The controversy over findings, which were presented in more detail in Chapter 2, basically reflects methodological variation of psychological instruments and an oversimplification of what is meant by social class. There have been a number of developments in psychiatry that have changed the context in which epidemiological research has been conducted. Concerned with systematizing and refining diagnostic systems, attempts have been made to build instruments specifically for epidemiological research, designed to be administered by lay interviewers, for example the Diagnostic Interview Schedule (DIS) [Robins et al., 1981] and the revised Clinical Interview Schedule (CIS-R) [Lewis et al., 1992], and questionnaires to screen CMD in community and health services such as the General

Health Questionnaire (GHQ) [Goldberg, 1972] and the Self Reporting Questionnaire (SRQ) [Harding et al., 1980]. In contrast, there is a continuing call for accurate research measures of social class. The need for a prior conceptualization is a major problem for social class measurement since theoretical formulations in this area tend to be complex, diverse and difficult to operationalize [Wright, 1979; Scase, 1992]. In this study, I argued that there are intermediaries between social class and CMD. In this way, the association of socioeconomic indicators, employment status and migration with CMD will be discussed individually, followed by an attempt to integrate the determinants of CMD in a causal hierarchy.

5.3.1 - Socioeconomic status

Education

The results of the present study were consistent with those obtained by Eaton and Ritter [1988], Power et al. [1991] and with those found in Brazilian studies in urban areas [Santana, 1982; Mari and Andreoli, 1990; Lima et al., 1996], suggesting a direct role played by education on CMD.

This is a cross-sectional study and cannot distinguish between the socioeconomic antecedents and consequences of CMD. However, access to school generally happens early in life, prior to the development of CMD. Therefore, it is unlikely that the strong association found in this study between less years of schooling and CMD can be explained by reverse causality.

It is also improbable that this finding can be explained by chance. The association was significant below 0.1% level ($p<0.0001$), which argues strongly against Type I error. Although over-reporting of psychiatric complaints might have led to an over-estimate of the prevalence in less educated people, this could not explain, by itself, the association found in this study because the apparent influence of education on misclassification by the SRQ-20 became statistically non significant after adjustment for gender. Furthermore, less education was strongly associated with psychiatric cases in the subsample from the validation study.

Education reflects socioeconomic circumstances of the family at early life [Rutter and Madge, 1976] and is an important cause of perpetuating inequalities in Brazil [Barros and Mendonça, 1994; Urani, 1995], given its role in sorting individuals into occupations. Education permits greater choices in life decisions and influences aspirations, self-image [Brown et al., 1986] and opportunities to acquire knowledge, which may motivate attitudes and behaviour toward lifestyle and health status [BMA, 1987]. It is possible that education is the most important link between social class and CMD, at least in less developed countries.

Occupational status

Occupation was associated with the prevalence of CMD to a statistically significant degree in the univariate analysis. After adjustment for education and income, the association was markedly reduced and became statistically not significant. Studies that have investigated the association between CMD and occupation have shown conflicting results [Brown and

Harris, 1978; Bebbington et al.,1981; Rodgers, 1991; Power et al., 1991; Stansfeld and Marmot, 1992; Meltzer et al., 1995; Weich and Lewis, in press]. Some suggested an occupational gradient in the prevalence of CMD, while others failed to find such an association.

In societies with high levels of unemployment, self-employment and underemployment such as Brazil, where a growing number of people find themselves without a single stable occupation and spend larger amounts of time outside the formal labour market, usual occupation becomes a less reliable indicator of living standards and lifestyle. In the present study, among those economically active, 38% were informal workers. Thirteen per cent of them were not qualified and were flexible in what job they were prepared to accept. According to Bartley et al. [1994], in this case occupation needs to be supplemented by more sensitive indicators of social class in public health research.

Income

Whereas for some authors [Possas, 1989; Power et al., 1991] income has an indirect effect on CMD as it determines the household assets, commodities and services which the household consumes, the findings reported here provide evidence of an independent association between low income and the prevalence of CMD. Although the majority of the sample belonged to low socioeconomic status, CMD differences were found across the sampled population with every level in the income hierarchy having worse health than the one above it.

There is strong evidence ($p<0.01$) that the association between income and CMD among males, was not due to the play of chance. In contrast, reverse causality cannot be excluded as an alternative explanation for this finding because those in better mental health might be selected into better jobs thus contributing to higher family incomes.

Although recall bias might have led to an over-estimate of the association between CMD and low income, it is unlikely that a whole household would over-report a financial problem.

The analysis stratified by gender showed an independent association between low income and CMD among males. Therefore, it is implausible that the female over-reporting could explain the income differences found in this study.

It is possible, however, that income differences, caused CMD. On the one hand low income brings stress and uncertainty [Lewis, 1996], whereas on the other hand, the effects of income inequality - social position within society - might also have an impact on psychosocial well-being, due to a cognitive comparison whereby people are made aware of the vast differences in socioeconomic status [Wilkinson, 1997]. As mentioned in the introductory remarks to this thesis, the northeast of Brazil has the largest inequality of income distribution in the country. For Wilkinson [1996], the "association between income distribution and homicide, violent crime, alcohol-related deaths, traffic accidents and deaths from 'other injuries' gives strong support to the view that the differences in income distribution have widespread psychosocial effects" [p.158]. It is not surprising that violence has been described as 'epidemic' in the RMR and is the second cause of death

in Olinda [Secretaria de Saúde de Olinda, 1993].

House ownership, housing conditions and possessions of household appliances

Similar to the results reported by Stansfeld and Marmot [1992], no significant association was found between CMD and house ownership. A statistically significant trend was found between CMD and housing conditions in the univariate analysis but, after adjustment for years of education and household *per capita* monthly income, the odds ratios became smaller and borderline significant. The gradient was reversed and individuals in the medium category for possessions of home appliances presented a higher prevalence of cases. In the same way as for housing conditions, this effect was confounded by education and income and ceased to reach statistical significance after adjustment for them. These results are in conflict with those found in developed countries [Murphy et al., 1991; Rodgers, 1991; Power et al., 1991; Meltzer et al., 1995, Weich and Lewis, in press].

As highlighted before (section 5.2.3.1), negative findings may result from great homogeneity in the sample. In the present study, only 19% lived in rented accommodation. Many of them lived in flimsy houses and only a small proportion owned a telephone, air conditioner, a washing machine or a car. On the one hand, the low proportion of tenants demonstrated how shanty towns were able to accomplish the dream of owing a house in Brazil. On the other hand, neither in industrialized countries nor in Brazil is living in a shack (even if owner occupied) a reflection of wealth. While in wealthier areas of the RMR house ownership represents available income and control of resources [Power et al., 1991; Stansfeld and Marmot, 1992], in a peripheral area, it

denotes slums, often illegal settlements self-constructed of various materials and inhabited by large numbers of people.

5.3.2 - Employment status

Unemployment has been acknowledged as an important determinant of CMD for males and females in both developed and developing countries. Nevertheless, certain aspects of jobs may also create an increased risk for CMD among the workers [Gardel, 1982; Seligmann, 1987; Warr, 1987; Graetz, 1993]. Most studies have focused on the experience of relatively affluent countries, where welfare provisions are securely in place. In Brazil, where self-employment and underemployment form a substantial and growing segment of the workforce, only a few studies [Almeida-Filho, 1981; Santana et al., in press] have considered the association between informal work and CMD.

Contrary to expectation but similar to the results reported by Hammarström et al. [1988], the relationship between unemployment and CMD was stronger among females than among males. Additionally, informal work was not associated with CMD in males. Two questions arise from the results presented in this study: are unemployment and informal work the cause or effect of CMD? is there a gender effect on the association between employment status and CMD?

Unemployment

Around 21% of the study population was unemployed. Although this proportion is very high when compared with 9.8% for the RMR reported by the Fundação Instituto Brasileiro de Geografia e Estatística (IBGE) in January 1993 (estimate nearest to start of this data collection), it is unlikely that it was overestimated. First, official figures related to unemployment in Brazil from different sources have been in conflict for a long time. The rates reported by Fundação SEADE/DIEESE[1] are more than twice those reported by IBGE (for example 4.2% versus 11.8% for the Metropolitan Region of Belo Horizonte in January, 1996)[2]. The main cause for this variation is that different definitions of unemployment have been used[3]. Furthermore, unemployment is highly non-random and concentrated among those at the bottom of the occupational ladder [Narendranathan et al., 1992; Bartley and Owen, 1996], reflecting wider economic inequalities [Stern, 1981]. In this study, almost 60% of the economically active population were manual workers.

There is a possibility that the unemployment effect among males was attenuated due to type II error. There were less males than females in this study and males presented a lower prevalence of CMD. Thus, it is plausible that the power to detect a significant difference was decreased. The interaction between employment status and gender was not significant. However, as mentioned in the results chapter, the test for interaction has low power and non-significant results should not be interpreted as establishing the absence of

[1] Fundação Sistema Estadual de Análise de Dados/Departamento Intersindical de Estatística e Estudos Sócio-Econômicos.
[2] Figures for the Recife Metropolitan Region from Fundação SEADE/DIEESE are not available.
[3] For further details, see Fundação SEADE/DIEESE 1996.

interaction [Statistical Methods in Epidemiology handbook, 1996].

Pre-existing health status can be an important factor in determining those who are able to find and keep their jobs and those in better mental health might be selected into employment - 'the healthy worker effect'. Although, cross-sectional studies cannot decide about the direction of the association, longitudinal studies have indicated the causal impact of being unemployed on CMD [Banks and Jackson, 1982; Warr and Jackson, 1985; Hammarström et al., 1988; Lahelma, 1992; Bartley et al., 1992; Graetz, 1993].

People's commitment to work reflects societal influences and the orientation towards work is motivated by a secularized form of the 'Protestant work ethic' (work as a duty and obligation) [Weber, 1977]. Brazil is a work-orientated society where the employment of the majority provides the main access to reward, status and security. In Brazil, work is a vital part of leading a decent life and 79% of the sampled population said that work was an essential part of life. Therefore, loss of public esteem due to unemployment [Warr, 1987] may have a negative effect on the individuals' psychological well-being. In this study, most of the unemployed were low educated, manual-workers belonging to a low income household. Thus, some of the association between unemployment and CMD could be attributable to financial hardship [Warr, 1987; Rodgers, 1991] for those who were already vulnerable because of their class position [Colledge and Hainsworth, 1982]. Furthermore, the low level of organization of the Brazilian labour market and the huge reserve workforce [Fundação SEADE/DIEESE, 1996] may bring pessimism about the future thus increasing anxiety [Warr, 1987].

Informal work

Informal workers form an underprivileged category for whom there is no protection by labour or social regulations. In Brazil, many of them are children and adolescents who left school to increase the household income [Urani, 1995]. In 1982, they accounted for 54% of those in paid work. Between 1989 and 1992, while the proportion of those formally working in the total workforce decreased by 8%, a steadily growing proportion of the unemployed found a job in the informal sector [Urani, 1995]. In this study, informal workers represented 38% of the economically active and 48% among those in paid work. Informal workers had lower incomes when compared to formal workers. It may be that some of them were not particularly inclined to enter self-employment and underemployment, but did so because the informality may have been a relatively easy way to secure some income while continuing the search for formal work (hidden unemployment) [Fundação SEADE/DIEESE, 1996].

Reverse causality could be of importance in the link between females working in the informal sector and high prevalence of CMD. Formal workers have more strict health selection criteria than informal workers and those with psychological problems may have their admission to formal jobs denied or previously healthy individuals may be more often discharged from their jobs at the onset of CMD.

Informal work may carry with it negative features, which make it of little benefit for psychological health. Informal workers lack the control of decision related to their salaries, hiring, dismissals and work-time, all determined by labour market demands and

by the convenience of employers. This uncertainty about their work situation [Lemkow, 1987] together with low earnings and lack of fringe benefits may increase anxiety.

Employment status and gender

The evidence of a stronger association between CMD, unemployment and informal work among females is a 'post hoc' finding. Despite that, it might be interesting to speculate some reasons for this. Unemployment is not a homogeneous experience [Warr, 1987; Graetz, 1993; Ezzy, 1993]. According to the literature reviewed, the experience of unemployment may differ considerably depending on a variety of characteristics such as: gender, age, income, social class, social support, reasons for job loss, commitment to employment, satisfaction with previous work, working conditions, length of unemployment, expectation of returning to work and the local unemployment rate. The combination of individual characteristics and different social meanings of unemployment results in a complex picture of the social psychology of unemployment [Warr, 1987; Graetz, 1993; Ezzy, 1993]. The economic activity rate of Brazilian women has been increasing in recent years, particularly in the form of self-employment, which allows more flexibility in the work schedule and facilitates part-time work, a crucial issue for women reconciling family duties and the need for a remunerated occupation [Santana et al., in press]. Although women have been pushed to work outside the home, they are facing higher unemployment rates and have lower salaries than men [Fundação SEADE/DIEESE, 1997]. In this study, the mean unemployment duration was significantly higher among women when compared to those for men. The decision to work or not reflects a number

of different aspects of a woman's life. According to Joffe [1985], women who undertake the multiple role responsibilities of being a spouse, mother and having a job are mainly those who have a professional career and are privileged, or those who are the least affluent. This latter socially disadvantaged group usually becomes engaged in an economic activity due to financial pressures. Most women, by entering employment, are essentially taking two jobs: that of paid employment as well as their unpaid work within the home [Macran, 1993]. However, our findings suggest that formal work was associated with better mental health. Although employment must represent an additional workload for women, it also makes a considerable difference to household income [Warr, 1987; Bartley et al.,1992] and protects some women from isolation, monotony and low status [Warr, 1987; Macran, 1993], which seems to accompany the role of being a housewife in Brazilian society. In contrast, informal work was associated with high prevalence of CMD among females. Domestic jobs, an extension of women's traditional household role, were common among informally employed women and represent limited opportunity for skill use [Warr, 1987]. The uncertainty about their work situation, as a consequence of informal work, plus the perception of injustice and discrimination [Santana et al., in press], due to lower chances than men in finding a formal job, might be negatively associated with women's affective well-being. This finding provides some evidence, though weak, of an interaction between gender and employment status. Since it was unexpected, it furnishes a promising lead to be explored in further studies.

5.3.3 - Migration

Despite the number of Latin American studies related to the association between migration and CMD, the results obtained so far have been conflicting as presented in more detail in Chapter 2. The findings of this study are in accordance with those reported by Inkeles and Smith [1970], Micklin and Leon [1978], Santana [1982], Almeida-Filho [1982], Reichenheim and Harpham [1991], Lima et al. [1996] and Coutinho et al. [1996], who dismissed any independent relationship between migration and CMD.

In this study, the majority of migrants were from rural areas (62%) and had been living in the RMR for more than 20 years, reflecting the peak of rural-to-urban migration into the RMR between 1960 and 1970. Since much Brazilian migration was for employment reasons [Singer, 1983], fewer of those unfit for work were likely to leave rural areas. Thus, selective migration of healthier people - 'migrator bias' [Sackett, 1979, Bentham, 1988] could lead to the negative findings in this study.

Despite the difficulties faced by migrants on their arrival in the RMR 20 years ago [Singer, 1983; Martine, 1994], in this study, no significant differences were found according to migration status for income and housing conditions. Additionally, there were more unemployed non-migrants than migrants.

Migration can lead to improvement or declines in living standards [Martine, 1994] depending on the conditions prior to migration [Singer, 1983] and following it. Although migration itself may exert a direct effect on CMD in the short term, its effect on mental

health in Brazil seems to be related to the experience of settling in urban areas. Consequently, only those who have not succeeded in finding a job [Coutinho et al., 1996] or a formal place in the labour market [Almeida-Filho, 1982] are the ones facing higher prevalence of CMD. There would have had to have been longitudinal data in the study of migration and its effect on mental health if causal routes are to be established. However, it would appear that Brazil has reached its peak in terms of urbanization while Africa and Asia will probably continue to experience high rates of urbanization for some years to come [World Bank, 1993].

5.3.4. Integrating the chain of causality

The analysis of ill-health in the economic, political and ideological context of a society implies the development of a theoretical framework rooted in the social sciences [Laurell, 1989]. Epidemiological research has not undertaken theoretically informed systematic analysis for the nature of social class [Marmot et al., 1987; Dohrenwend, 1990] and CMD are conventionally 'broken down' by *ad hoc* and uncritically selected indicators of SES [Dohrenwend, 1990]. Terms like social status, social inequality, social stratification, socioeconomic status and social class have been used interchangeably without theoretical distinctions [Liberatos et al., 1988; Dohrenwend, 1990]. Social class and socioeconomic status measures such as education, occupation and income, stem from two different theoretical orientations and focus on different aspects of inequality [Dohrenwend, 1990; Wohlfarth, 1997]. While social class focuses on control as the essence of socioeconomic inequality, SES focuses on prestige [Wohlfarth, 1997]. Social class differences can be summarized in some of its outcomes, like education, income or employment status, but

these outcomes are only levels of the process, and are limited manifestations of a highly complex social relationship. Social class is not a variable like any other [Marmot et al.,1987; Possas, 1989]. It is a theoretical concept, hence abstract, with broader explicative power and it should be placed in the top of the causal chain. Social class determines different access to education and employment, material standards of living, lifestyles and working conditions and these are in turn the proximate determinants of CMD [Possas, 1989].

Though education, income and employment were separated in this study, they are different aspects of the same context and must be considered together to aggregate the immediate determinants of CMD in a causal hierarchy. While education represents early circumstances, income and employment status are related to recent experiences. Despite considerable mobilities in society, there is an extent to which social class is transmitted from one generation to the next [Wohlfarth, 1997]. Class of origin affect parenting behaviour [Rutter and Madge, 1976] and this may have implications for scholastic attainment. Individuals' education and training [Power et al., 1991; Iacoponi et al., 1991], in turn, influences subsequent socioeconomic circumstances [Urani, 1995]. Primary education in Brazil is free and theoretically compulsory, but only one in seven children completes elementary school. One of the reasons for this high dropout rate is the need to earn money very early in life [Iacoponi et al., 1991]. While educated people are more likely to come from wealthy families, education also provides the qualification to acquire certain occupations [Halsey et al., 1980, Goldthorpe, 1980]. In this study, those with less years of schooling were often displaced from the formal labour market and engaged in strenuous and low-income jobs as a consequence of scarce occupational skills. Less qualified, they were underemployed without any kind of work rights. In addition, the

unemployed tended to be low educated and manual-workers. For some authors [Barros and Mendonça, 1994; Urani, 1995], disparity in school attainment is the most important cause of perpetuating income inequality in Brazil. Improved education allows individuals to enter the labour market later at a better working conditions and thus contributing to higher family incomes. Were child labour eradicated, the scarcity of man power might increase the salaries for those unskilled adult workers currently in the labour market. This could bring about a positive impact in working conditions in both short and long-term.

CHAPTER 6 - CONCLUSIONS AND RECOMMENDATIONS

The aim of this study was to investigate the specific links between social class and the prevalence of CMD in a low income area of Olinda, in the state of Pernambuco, Northeast Brazil. The analysis brought together a wide range of potential explanatory variables, collected specifically for the purpose of this study. These were grouped under four headings: demographic and socioeconomic characteristics, employment status and migration. This chapter summarizes the main conclusions and recommends high-risk and population-based health interventions and priorities for further research in the area.

6.1 - MAIN CONCLUSIONS

- The two most consistently identified risk factors for CMD in the community - low socioeconomic status [Marmot et al., 1987; Dohrenwend, 1990; Power et al; 1991; Meltzer et al. 1995] and female gender [Jenkins, 1985; Macran, 1993] were reinforced by this study results.

- Even within a poor area there are still substantial social difference in the prevalence of CMD.

- Education, representing early circumstances in life, and income, reflecting current situation, seem to be the most powerful indicators of social class disadvantages related to CMD in this area.

- The unemployed showed a higher prevalence of CMD, although this association was more striking in females.

- Informal work has many negative features which probably (?) make it of little benefit for psychological health, at least among females.

- Migration was not associated with CMD after adjustment for gender and age.

- Females, the elderly, the less educated, housewives, migrants and those with the lowest income tended to over-report on the SRQ-20 compared to a psychiatric interview. Part of

these findings could be explained simply in terms of gender differences, suggesting that over-reporting is related to being female rather than any other factors. Despite that, it is unlikely that the female over-reporting could entirely account for the social differences found in this study.

Our findings suggest how the contribution of later socioeconomic conditions to the prevalence of CMD, such as occupation, housing conditions and household appliances, could be understood in part by their association with education. This is not to imply that later circumstances were reflecting only the influence of earlier life. Unemployed, informal workers and those belonging to low income households tended to be less educated. However, employment status and low income had an independent association with CMD. For example, in women a difference of more than twofold in the prevalence of CMD existed among unemployed and informal workers even after allowing for education.

6.2 - RECOMMENDATIONS FOR PUBLIC HEALTH INTERVENTIONS

From a public health perspective, the challenge is to improve mental health and to decrease health inequalities [Power et al., 1991; Wilkinson, 1996; Weich, 1997]. Any intervention in this direction needs to be linked to community level initiatives in order to plan more appropriate and culturally sensitive action [Harpham, 1994; Weich, 1997].

The most commonly advocated approach to minimize social differences in CMD involves targeting individuals at high risk of disorder [Weich, 1997]. However, a high risk

intervention on its own is unlikely to reduce the prevalence of CMD to any significant extent if general social class differentials persists [Marmot et al.,1987; Weich, 1997]. Therefore, high risk interventions should be combined with population-based risk reductions programme.

6.2.1 - High-risk interventions

The results of this investigation will be discussed with local organizations, local health authorities and health care providers for planning high-risk interventions to improve mental health in the study area.

- Support groups for those at increased risk of disorder (females, less educated and low income people who have experienced unemployment) may reduce the prevalence of CMD.

- Improved diagnostic systems have made the detection of CMD easier and there are simple and effective treatment. Thus, GPs should be trained in the recognition and management of CMD. This could bring a decrease in the duration of episodes.

6.2.2 - Long-term or population-based interventions

The long-term public health measures should concentrate on a general improvement of the socioeconomic status of the population through promotion of school attendance, the reduction of unemployment, improvement of the quality of the jobs and egalitarian political interventions, such as changes in taxation and income distribution. It is possible

that these long-term measures would have a positive influence on CMD by the achievement of a better quality of life. It should be borne in mind that although population-based interventions could exert a more lasting effect on CMD, they are costly and as yet unsupported by empirical evidence. Therefore, the cost-effectiveness and acceptability need to be evaluated.

The failure to eradicate inequalities is not simply lack of economic resources. It remains to be seen whether Brazil can somehow find a fair way forward towards a society in which there is respect for all its people, or whether it will keep to the model it has followed so far - of prosperity only for the few.

6.3 - RECOMMENDATIONS FOR FURTHER RESEARCH

The association between social class and CMD is a complex issue. In identifying priorities for future research one has to tackle problems such as definition of social class. The recommendations for further research made in this section are addressed to overcome possible methodological shortcomings present in this study. A community-based prospective cohort study is recommended since it would provide a more accurate assessment of the following points:

- The impact of social class in early life on personality disorder in childhood and behavioural/psychological problems in adolescence.

- The impact of personality and mental health in childhood on school attainment.

- More understanding of the vulnerability of females to CMD

- Changes in mental health associated with unemployment and the growth in the informal sector of the economy

- Given the magnitude of the association between unemployment and informal work among females, the prospective study should have a larger sample to be able to investigate any gender-effect on employment status.

- Future studies should be based on a theoretically meaningful approach to social class.

REFERENCES

Almeida-Filho, N. (1981) 'Força de trabalho e saúde mental em um setor urbano de Salvador, Bahia', *J Bras Psiq*, 30(6), pp 463-470.

Almeida-Filho, N. and Bastos S.B. (1982) 'Estudo caso-controle da associação entre migração e desordens depressivas em mulheres', *J Bras Psiq*, 31(1), pp 25-29.

Almeida-Filho, N. (1982) 'The psychosocial costs of development: Labour, migration and stress in Bahia, Brazil', *Latin Am.Rev.* 17, pp 91-118.

Almeida-Filho, N. (1987) 'Epidemiologia social das desordens mentais: Revisão da literatura Latino-Americana' in Tundis, S. e Costa, N. *Cidadania e Loucura: Políticas de Saúde Mental no Brasil*, Petrópolis: Editora Vozes Ltda, pp 103-131.

Almeida-Filho, N., Mari, J.J. and Coutinho, E. (1994) 'Rural-urban migration in Latin America: the debate continues' in Harpham, T. and Blue, I. *Urbanization and mental health in developing countries*, Aldershot: Avebury, pp 41-60.

Almeida-Filho, N., Mari, J.J., Coutinho, E., França, J.E., Fernandes, J.G., Andreoli, S.B., Busnello, E.D. (1992) 'Estudo multicêntrico de morbidade psiquiátrica em áreas urbanas brasileiras (Brasília, São Paulo, Porto Alegre)', Revista ABP-APAL. 14(3): pp 93-104.

Altman, D.G. (1991) *Practical Statistics for Medical Research*, London: Chapman and Hall.

Anderson, J., Huppert, F. and Rose, G. (1993) 'Normality, deviance and minor psychiatric morbidity in the community: A population-based approach to General Health Questionnaire data in the Health and Lifestyle Survey', *Psychological Medicine*, 23, pp 475-485.

Aneshensel, C. (1986) 'Marital and employment role-strain, social support and depression among adult women' in Hobfall S., *Stress, Social Support and Women*, Washington DC: Hemisphere.

Araya, R.I., Wynn, R. and Lewis, G. (1992) 'Comparison of two self-administered psychiatric questionnaires (GHQ-12 and SRQ-20) in primary care in Chile', *Social Psychiatric and Psychiatric Epidemiology*, 27: pp 168-173.

Ashton-Tate Corporation (1990), *dBase IV.*

Banco do Nordeste do Brasil - BNB (1975) 'Migrações Para as Grandes Cidades do Nordeste', *Série estudos Econômicos e Sociais.*

Banks, M.H. and Jackson, P.R. (1982) 'Unemployment and risk of minor psychiatric disorder in young people: cross-sectional and longitudinal evidence', *Psychological Medicine*, 12: pp 789-798.

Bartley, M., Popay, J., and Plewis, I. (1992) 'Domestic conditions, paid employment and women's experience of ill-health', *Sociology of Heath and Illness*, 14(3): pp 313-343.

Bartley, M., Power, C., Blane, D., Smith, G.D., and Shipley, M. (1994) 'Birth weight and latter socioeconomic disadvantage: evidence from the 1958 British cohort study', *BMJ.* 309: pp 1475-1478.

Bartley, M. and Blane, D. (1994) 'Appropriateness of deprivation indices must be ensured', *BMJ.* 309: pp 1479.

Bartley, M. and Owen, C. (1996) 'Relation between socioeconomic status, employment, and health during economic change, 1973-93', *BMJ.* 313: pp 445-449.

Barros, R. and Mendoça, R. (1994) Mimeo apresentado no Fórum sobre Desigualdade de Renda e Pobreza no Brasil organizado pelo IPEA no BNDES, em novembro de 1994.

Bebbington, P., Hurry, J., Tennant, C., Stuart, E., and Wing, J.K. (1981) 'Epidemiology of mental disorders in Camberwell', *Psychological Medicine.* 11: pp 561-579.

Bennett S. (1991) 'Survey Sampling', *Department of Epidemiology and Population Sciences*. London School of Hygiene and Tropical Medicine.

Bentham, G. (1988) 'Migration and morbidity: Implication for geographical studies of disease', *Soc. Sci. Med.* 26(1): pp 49-54.

Birtchnell, J., Masters, N. and Deahl, M. (1988) 'Depression and the physical environment', *British Journal of Psychiatry*, 153: pp 56-64.

Blue, I. and Harpham, T. (1994) 'The World Bank World Development Report 1993: investing in health' implications for common mental disorders', *British Journal of Psychiatry*, 165, pp 9-12.

BMA (1987) *Deprivation and ill-Health*, Board of Science and Education, British Medical Association.

Brenner, M.H. (1979) *Mental illness and the economy*, Cambridge: Harvard University Press.

Bryson, A. and White, M. (1996) *From unemployment to self-employment*, London: Policy Study Institute.

Broadhead , W.E., Blazer, D.G., George, L.K. et al. (1990) 'Depression, disability days, and days lost from work in a prospective epidemiological survey', *JAMA*, 264, pp 2524-2528.

Brody, E.B. (1973) *The lost ones: social forces and mental illness in Rio de Janeiro*, New York: International University Press.

Brown, G.W. and Harris, T.O., (1978) *Social Origins of Depression: A study of psychiatric disorder in women*, London: Tavistock.

Brown, G.W., Harris, T.O. and Bifulco, A. (1986) Long-term effects of early loss of parent, in *Depression in young people: Developmental and clinical prespectives* (eds M.L. Rutter, C.E. Lizard and P.B. Read), Guilford Press, New York, pp 251-296.

Bruce, M., Takeuchi, D. and Leaf, P. (1991) 'Poverty and psychiatric status', *Arch Gen Psychiatry,* 48, pp. 470-474.

Busnello, E., Lima, B., and Bertolote J. (1983) 'Aspectos interculturais de classificação e diagnóstico' *J Bras Psiq*, 32, pp 207-210.

Caravedo, B. Rotondo, H. and Mariátegui, J. (1963) *Estudios de psiquiatria social en el Peru*, Lima: Ediciones del Sol.

Cassel, J., Patrick, R. and Jenkins, D. (1960) 'Epidemiological analysis of the health implications of cultural changes: a conceptual model' *Annals of the NY Academy of Sciences*, 84, pp 938-49.

Centers for Disease Control (1990/91), *EPI INFO version 5.01.* U.S.A.

CEPAL (1989) 'Transformatión Ocupacional y Crísis Social en America Latina,' Santiago: United Nations.

Cheng, T.A. (1988) 'A community study of minor psychiatric morbidity in Taiwan', *Psychological Medicine*, 18, pp 953-968.

Cheng, T.A. (1989) 'Urbanization and minor psychiatric morbidity: a community study in Taiwan', *Soc.Psychiat.psychiat.Epidemiol*, 24, pp 309-316.

Clark, L.A. and Watson, D. (1991) 'Theorethical and Empirical Issues in Differentiating Depression from Anxiety' in Becker, J and Kleinman, A. *Psychosocial Aspects of Depression*, New Jersey: Lawrence Erlbaum Associates.

Clayton, D. and Hills, M. (1993) *Statistical models in epidemiology*, Oxford: Oxford University Press.

Cochrane, R. and Stopes-Roe, M (1981) 'Women, marriage, employment and mental health', *British Journal of Psychiatry*, 139: pp 373-381.

Colledge, M. (1982) 'Economic cycles and health: towards a sociological understanding of the impact of the recession on health and illness', *Soc. Sci.Med.* 16: pp 1919-1927.

Colledge, M. and Hainsworth, M. (1982) 'Death on the dole? the impact of unemployment on health', *Medicine in Society*, 8(2): pp 15-22.

Cooke, D. (1987) 'The significance of life events as a cause of phychological and physical disorder' in: Cooper, B. *Phychiatric epidemiology*, London: Croom Helm., pp 67-80.

Coutinho, E., Almeida-Filho, N., Mari, J. and Rodrigues, L. (1996) 'Minor psychiatric morbidity and internal migration in Brazil', *Soc Psychiatry Psychiatr Epidemiol*, 31, pp. 173-179.

Costello, C.G. (1982) 'Social factors associated with depression: A retrospective community study', Psychological Medicine. 12: pp 329-339.

Cox, B.D., Blaxter, M., Buckle, A.L.J. et al. (1987) *The Health and Lifestyle Survey*, Cambridge: Health Promotion Research Trust.

Creed, F. (1993) 'Life Events' in Bhugra, D. and Left, J. *Principles of social psychiatry*, Oxford: Blackwell Scientific, pp 144-161.

Croft-Jefferys, C. and Wilkinson, G. (1989) 'Estimated costs of neurotic disorder', *Psyhological Medicine*, pp 549-558.

Dohrenwend, B.P. and Dohrenwend, B.S. (1974) 'Psychiatric disorders in urban settings' in *Am. Handbook Psychiat.* Vol. 2. New York: Basic Books, pp 424-447.

Dohrenwend, B.P. (1983) 'The epidemiology of mental disorders' in Mechanic, D., *Handbook of health, health care, and the health professions*, New York: Free Press, pp 157-194.

Dohrenwend, B.P. (1990) 'Socioeconomic status (SES) and psychiatric disorders: Are the issues still compelling?', *Soc Psychiatry Psychiatr Epidemiol.* 25: pp 41-47.

Dohrenwend, B.P., Levav, I., Shrout, P.E. et al (1992) 'Socioeconomic status and psychiatric disorders: the causation-selection issue', *Science*, 255, pp. 946-952.

Dressler, W.W. (1985) 'Extended family relationships, social support, and mental health in a southern black community' *J. Hlth. soc. Behav.*, 26, pp 39-48.

Duchiade, M.P. (1995) 'População brasileira: um retrato em movimento' in Minayo,

MCS. *Os Muitos Brasis: saúde e população na década de 80*, São Paulo-Rio de Janeiro: editora HUCITEC-ABRASCO, pp 14-56.

Duncan, B.B., Schmidt, M.I., Achutti, A.C., Polanczyk, C.A., Benia, L.R., and Maia, A.A.G. (1993) 'Socioeconomic distribution of noncommunicable disease risk factors in urban Brazil: The case of Pôrto Alegre', *Bulletin of PAHO*, 27(4): pp 337-348.

Durston, J. (1986) 'Transitión estructural, movilidad ocupacional y crísis social em America Latina, 1960-1983,' *Documento de Trabajo*, LC/R.547, Santiago: CEPAL.

Eaton, W.W., Ritter, C. (1988) 'Distinguishing anxiety and depression with field survey data', *Psychological Medicine*, 18: pp 155-166.

Ekblad, S. (1990) 'Family stress and mental health during rapid urbanization: the vulnerability of children in growing Third World Cities' in Nordberg, E. and Finer, D. *Society, environment and health in low-income countries*, Goteberg: Graphic systems AB, pp 113-127.

Epidemiology Manual (1990/91), *Department of Epidemiology and Population Sciences.* London School of Hygiene and Tropical Medicine.

Ezzy, D. (1993) 'Unemployment and mental health: A critical review', *Soc.Sci.Med.* 37(1): pp 41-52.

Ferrie, J.E., Shipley, M.J., Marmot, M.G., Stansfeld, S. and Smith, G.D.(1995) 'Health effects of anticipation of job change and non-employment:longitudinal data from the Whitehall II study' *BMJ*, 311, pp 1264-1269.

Finlay-Jones, R. and Burvill, P. (1977) 'The prevalence of minor psychiatric morbidity in the community', *Psychological Medicine*, 7, pp 474-489.

Fleiss, J.L. (1987) *The design and analysis of Clinical Experiments*, New York: Willey.

Freeman, H. (1984) *Mental Health and the environment,* Edinburgh: Churchill Livingstone.

Fryer, D. (1986) 'Employment deprivation and personal agency during unemployment: A critical of Jahoda's explanation of the psychological effects of unemployment', *Soc. Behav*, 1, pp 3-23.

Fundação de Desenvolvimento da Região Metropolitana do Recife - FIDEM (1990), Perspectivas e potencialidades da economia metropolitana - Sugestões de políticas.

Fundação de Desenvolvimento da Região Metropolitana do Recife - FIDEM (1995), *Caracterização da Pobreza na Região Metropolitana do Recife* (Versão Preliminar).

Fundação de Desenvolvimento da Região Metropolitana do Recife - FIDEM (1996), *Pobreza Urbana: Bases para a formulação de um programa de ação integrada* (Versão Preliminar).

Fundação de Informações para o Desenvolvimento de Pernambuco - FIDEPE (1980) *Indicadores sociais de Pernambuco*, Recife.

Fundação Instituto Brasileiro de Geografia e Estatística - IBGE (1983) *Censo demográfico, 1980, 9 mão de obra, volume 1, tomo 5, numero 12*, Rio de Janeiro.

Fundação Instituto Brasileiro de Geografia e Estatística - IBGE (1991a) *Censo demográfico de Pernambuco*, Rio de Janeiro.

Fundação Instituto Brasileiro de Geografia e Estatística - IBGE (1991b) *Indicadores IBGE,* Rio de Janeiro.

Fundação Instituto Brasileiro de Geografia e Estatística - IBGE (1992) *Anuário Estatístico do Brasil,* Rio de Janeiro.

Fundação Instituto Brasileiro de Geografia e Estatística - IBGE (1993) *Indicadores IBGE,* Rio de Janeiro.

Fundação Sistema Estadual de Análise de Dados - SEADE, Departamento Intersindical de Estatística e Estudos Sócio-Econômicos - DIEESE (1996) *Elementos para compreender a controvérsia sobre as taxas de desemprego no Brasil.*

Fundação Sistema Estadual de Análise de Dados - SEADE, Departamento Intersindical de Estatística e Estudos Sócio-Econômicos - DIEESE (1997) *Pesquisa de Emprego e Desemprego na Grande São Paulo.*

Gabe, J. and Williams, P. (1987) 'Women, housing, and mental health', *International Journal of Health Services*. 17(4): pp 667-679.

Gardel B. (1982) 'Worker participation and autonomy: A multilevel approach to democracy at the work place', *Int.J.Health Serv.* 12(4): 527-558.

Gaviria, F.M., Richman, J.,Flaherty, J.A., Wintrobe, R.M., Martinez, H., Pacheco, C.G., Pathak, D.S., Mitchell, T. and Birz, S. (1986) 'Migration and mental health in Peruvian society: toward a psychosocial model', *Soc. Psychiat*, 159, pp 193-199.

Gilbert, A. and Gugler, J. (1983) *Cities, Poverty and Development: Urbanization in the Third World*, Great Britain: Oxford University Press.

Gilbert, A. and Gugler, J. (1992) *Cities, Poverty and Development: Urbanization in the Third World*, 2nd edt, Great Britain: Oxford University Press.

Goldberg, D.P. (1972) *The detection of psychiatric illness by questionnaire*, London: Oxford University Press.

Goldberg, D. and Huxley, P. (1992) *Commom Mental Disorders: A Bio-social model*, London and New York: Tavistock/Routledge.

Goldstein, G. (1991) 'Environmental characteristics of inner cities' in Parry-Jones, W. and Queloz, N. *Mental Health and Deviance in inner cities*, Geneva: WHO, pp 6-9.

Goldthorpe, J.H. (1980) *Social mobility and class structure in modern Briatin*, Oxford: Clarendon Press.

Graetz, B. (1993) 'Health consequences of employment and unemployment: Longitudinal evidence for young men and women', *Soc. sci. Med.* 36(6): pp 715-724.

Gravelle, H.S.E., Stern, J. and Hutchinson, G. (1981) 'Mortality and Unemployement: a critique of Brenner's time-series analysis, *The Lancet*, September, 26.

Guerra, A. and França, J. (1990) 'A cabeça do País', *IstoE Senhor, 1107*: pp 45-48.

Guimarães, L. and Souza, A.V. (1984) 'A dinâmica de trabalho urbano no nordeste' in Carvalho, I.M. and Haguete, T.M. *Trabalho e condição de vida no nordeste,* São Paulo: HUCITEC.

Hammarström, A., Janlert, U., and Theorell, T. (1988) 'Youth employment and ill health: Results from a 2-year follow-up study', *Soc. Sci. Med.* 26(10): pp 1025-1033.

Harding, T.W., Arango, T.W. et al. (1980) 'Mental Disorders in primary health care: a study of the frequency and diagnosis in four developing countries' *Psychological Medicine*, 10, pp 231-241.

Harpham, T., Lusty, T. and Vaughan, P. (1988) *In the shadow of the city: community health and the urban poor,* Oxford: University Press.

Harpham, T. (1990) 'Urbanization and mental disorder' in Bhugra, D. and Leff, J. *Principles of Social Psychiatry*, London: Blackwell Scientific Publications.

Harpham, T. (1994) 'Urbanization and mental health in developing countries: a research role for social scientists, public health professionals and social psychiatrists' *Soc. Sci. Med.*, 39(2), pp 233-245.

Harpham, T. and Blue, I. (eds) (1995) *Urbanization and mental health in developing countries* , Aldershot: Avebury.

Halsey, A.H., Heath, A.F. and Ridge, J.M. (1980) *Origins and destinations: Family*

class and education in Modern Britain, Oxford: Clarendon Press.

Heller, A. (1993) *Uma teoria da história*, Rio de Janeiro: Editora Civilização Brasileira.

Hennekens, C.H. and Buring, J.E. (1987) *Epidemiology in Medicine*, Boston: Little, Brown and Company.

Hill, J. (1978) 'The psychological impact of unemployment', *New Society,* 43(798), pp 188-120.

Hodiamont, P., Peer, N. and Syben, N. (1987) 'Epidemiological aspects of psychiatric disorder in a Dutch health area', *Phychological Medicine,* 17, pp 495-506.

Holzer M.G., Shea, B.M., Swanson, L.W., Leaf, P.J., Myers, J.K., George, L., Weissman, M.M. and Bednarsky, P. (1986) 'The increased risk for specific psychiatric disorders among persons of low socioeconomic status: evidence from the epidemiologic catchment area surveys', *Am.J Soc Psychiatry*, 4: pp 59-271.

Huber, P.J. (1967). The behaviour of maximum likelihood estimates under non-standard conditions. *Procedings of the fifth Berkley Symposium on Mathematical Statistics and Probablity* 1, pp 221-233.

Huttly, S. (1991) 'Sample size determination', *Statistical Methods in Epidemiology Study Unit.* Department of Epidemiology and Population Sciences. London School of Hygiene and Tropical Medicine.

Iacoponi, E., Laranjera, R.R., Mari, J.J. (1991) Brazil: A giant wakes up to progress and inequality. Chapter 13 in Appleby, L. and Araya, R., *Mental health services in the global village*, UK: Gaskell.

Inkeles, A. and Smith, D. (1970) 'The fate of personal adjustment in the process of modernization', *Int J Comp Sociol*, 2, pp 81-113.

Jahoda M. (1988) 'Economic recession and mental health: some conceptual issues,' *J.soc. Issues*, 44, pp 13-23.

Jenkins, R., Macdonald, A., Murray, J. and Strathdee, G. (1982) 'Minor psychiatric morbidity and the threat of redundancy in a professional group' *Psychological Medicine*, 12, pp 799-807.

Jenkins, R. (1985) 'Sex differences in minor psychiatric morbidity', *Psychological Medicine, Monograph Supplement No 7*, London: Cambrige University Press.

Jenkins, R., Lewis, G., Bebbington, P., Brugha, T., Farrell, M., Gill, B., Meltzer, H. (1997) 'The National Psychiatric Morbidity surveys of Great Britain- initial findings from the household survey', *Psychological Medicine*, 27, pp 775-789.

Joffe, M. (1985) 'Biases in research on reproduction and women's work', *International Journal of Epidemiology*, 14(1), pp 118-123.

Jones, I. and Cameron, D. (1984) 'Social class analysis - an embarrassment to epidemiology', *Community Medicine*, 6, pp 37-46.

Kandel, B.D., Davies, M. and Raveis, V.H. (1985) 'The stressfulness of daily social roles for women, marital, occupational and household roles', *Journal of Health and Social Behaviour*, 26: 64-78.

Kassarda, J.D. and Parnell, A.M. (1993) *Third world cities*, London: Sage.

Kendell, R. (1975) *The Role of Diagnosis in Psychiatry*, Oxford: Blackwell.

Kitagawa, E.M. and Hauser, P.H.M. (1973) *Differential mortality in the United States. A study in socioeconomic epidemiology*, Cambridge: Harvard University Press.

Kleinman, A. (1988) *Rethinking Psychiatry*. London: The Free Press.

Kleinman, A. (1991) 'Preface-part II. The study of mood disorders in international perspective', in Becker, J. and Kleinman, A., *Psychosocial Aspects of Depression*. New Jersey: Lawrence Erlbaum Associates, Inc.

Kleinbaum, D.G., Kupper, L.L., Morgenstein, H. (1982) *Epidemiological research: principles and quantitative methods*, New York: Van Nostrand Reinhold.

Kleinbaum, D.G., (1994) *Logistic regression: a self-learning text*, New York: Springer Verlag.

Kowarick, L. (1997) 'Urban spoliation, social struggles and citizenship: aspects of recent history', (unpublished document), 13 p.

Lahelma, E. (1992) 'Unemployment and Mental Well-Being: Elaboration of the relationship', *International Journal of Health Services*, 22(2): pp 261-274.

Laurell, A.C. (1989) 'Social analysis of collective health in Latin America', Soc. Sci. Med. 28(11), pp 1183-1191.

Lemkow, L. (1987) 'The employed unemployed: the subterranean economy in Spain' *Soc Sci Med*, 25, pp 111-113.

Leroy, C. (1991) 'Methodology and study of the relationships between health and the urban environment with reference to the UNESCO MAB Urban Ecosystem Programme' in Parry-Jones, W. and Queloz, N., *Mental Health and Deviance in inner cities*. Geneva: WHO, pp 10-11.

Lewis, G., Pelosi, A.J., Araya, R., Dunn, G. (1992),'Measuring psychiatric disorder in

the community: a standardized assessment for use by lay interviewers', *Psychological Medicine*, 22, pp 465-486.

Lewis, G. (1996) 'Depression and the public health', *International Review of Psychiatry*, 8: pp 290-293.

Liberatos, P., Link, B.G and Kesley, J.L. (1988) 'The measurement of social class in epidemiology', *Epidemiologic Reviews*, 10: pp 87-121.

Lima, M.S., Beria, J.U., Tomasi, E., Conceicao, A.T. and Mari, J. (1996) 'Stressful Life Events and Minor Psychiatric Didorders: An estimate of the population attributable fraction in a Brazilian community-based study', *Psychiatry in Medicine*, 26 (2), pp 211-222.

Macharelli, C.A. and Oliveria, L.R. (1991) 'Perfil do risco de óbito de crianças menores de um ano residentes em localidade do Estado de São Paulo, Brasil, 1987', *Rev.Saúde públ., S.Paulo*, 25(2): pp 121-128.

Machado, L.M.V. (1991) 'The problem for woman-headed households in a low-income housing programme in Brazil' in Sontheimer, S., *Women and the environment, a reader: crisis and development in the Third World*, London: Earthscan.

Macran, S. (1993) *Role enhancement or role overload? A review of research on the health consequence of women's domestic and paid work*, London: Centre for Population Studies, London School of Hygiene and Tropical Medicine.

Mari, J.J. and Williams, P. (1984) 'Preliminary communication Minor psychiatric disorder in primary care in Brazil: a pilot study' *Psychological Medicine*, 14, pp 223-227.

Mari, J.J. and Williams, P. (1986) 'Misclassification by psychiatric screening questionnaires', *J Chron Dis* 39(5): pp 371-378.

Mari, J.J. (1987) 'Psychiatric morbidity in three primary medical care clinics in the city of São Paulo: issues on the mental health of the urban poor', *Social Psychiatric*, 22, pp 129-138.

Mari, J.J. and Andreoli, S.B. (1992) *Estudo multicêntrico de transtornos mentais: Relatório preliminar - Setor São Paulo*, São Paulo: Escola Paulista de Medicina (mimeo).

Mari, J.J., Almeida-Filho, N., Coutinho, E., Andereoli, S.B., Miranda, C.T., Streiner, D. (1993) 'The epidemiology of psychotropic use in the city of São Paulo', *Psychological Medicine*. 23: pp 467-474.

Marmot, M.G., Kogevinas, M. and Elston, M.A. (1987) 'Social/Economic Status and Disease', *Am.Rev.Public Health*, 8: pp 111-135.

Martine, G. (1990) 'As migrações de origem rural no Brasil: uma perspectiva histórica' in ABEP/IUSSP/Celade/Fundação SEADE *História e população: estudos sobre a América Latina*, São Paulo, pp 16-26.

Martine, G. (1992) 'Ciclos e destinos da migração para áreas de fronteira na era moderna: uma visão geral' *Instituto Sociedade, População e Natureza*, documento de trabalho n.12.

Martine, G. (1994) 'Estado, economia e mobilidade geográfica: retrospectiva e perspectivas para o fim do século', *Rev. Bras. Estudos Pop, 11(1), pp 41-60.*

Maxwell, A. (1972) 'Difficulties in a dimensional description of symptomatology', *British Journal of Psychiatry*, 121, pp 19-26.

Meltzer, H., Gill, B. and Petticrew, M. (1995) 'The prevalence of psychiatric morbidity among adults aged 16-64 living in private households in Great Britain', *OPCS Surveys of Psychiatric Morbidity in Great Britain. Report No 1,* London: HMSO.

Micklin, M. and Leon, C. (1978) 'Life change and psychiatric disturbance in a South American city: The effects of geographic and social mobility', *Journal of Health and Social Behavior*,19, pp 92-107.

Ministério da Previdência e Assistência Social (1975). *Assistência Psiquiátrica na Previdência Social,* Brasília.

Morrell, S., Taylor, R., Quine, S., Kerr, C. and Western, J. (1994) 'A cohort study of unemployment as a cause of psychological disturbance in a Australian youth', *Soc.Sci.Med.* 38(11): pp 1553-1564.

Morris, J.K. and Cook, D.G. (1991) 'A critical review of the factory closures on health', *British Journal of Industrial Medicine*, 48, pp 1-8.

Moser, C.A. and Kalton, G. (1971) *Survey methods in social investigation*, Hants: Gower.

Moser, C.O.N. (1993) *Gender, planning and development: theory, practice and training*, London: Routledge.

Murphy, J., Olivier, D.C., Monson, R.R. et al (1991) 'Depression and anxiety in relation to social status', *Arch Gen Psychiatry*, 48, pp. 223-228.

Narendranathan, W., Nickell, S. and Metcalf, D. (1982) *An investigation into the incidence and dynamic structure of sickness and unemployment in Britain, 1965-1975*, London: Centre for Labour Economics, London School of Economics.

Oliveira, O. and Roberts, B. (1996) 'Urban Development and Social Inequality in Latin America' in Gugler, J. *The Urban Transformation of the Developing World,* Great

Britain: Oxford University Press, pp 253-314.

Pereira, L.T., (1988) *Economia Brasileira*, São Paulo: Editiora Brasiliense S.A.

Platt, S. (1984) 'Unemployment and suicidal behaviour: a review of the literature', *Soc. Sci.Med.*, 19(2): pp 93-115.

Platt, S. (1986) ' Parasuicide and unemployment' *British Journal of Psychiatry*, 149: pp 401-405.

Platt, S. and Kreitman, N. (1990) 'Long term trends in parasuicide and unemployment in Edinburgh, 1968-87', *Soc. Psychiatric Psychiatr Epidemiol.*, 25: pp 56-61.

Pocock S.J. (1990) *Clinical Trials: a practical approach*, Essex: John Wiley and Sons, Triptree.

Ponce, O.V. (1970) *Migración interna a la metrópolis*, Lima: Imprenta de la Universidade de San Marcos.

Possas, C. (1989) *Epidemiologia e Sociedade: heterogeneidade estrutural e saúde no Brasil*, São Paulo: Editora Hucitec.

Power, C., Mannor, O. and Fox, J. (1991) *Health and Class: the early years*, London: Chapman and Hall.

Power, C. and Manor, O. (1992) 'Explaining social class differences in psychological health among young adults: A longitudinal perspective', *Soc Psychiatry Psychiatr Epidemiol.* 27: pp 284-291.

Pritchard, C. (1990) 'Suicide, unemployment and gender variations in the Western world 1964-1986' *Soc. Psychiatry Psychiatr Epidemiol,* 25: pp 73-80.

Quinton, D. (1980) 'Family life in the inner city: mith and reality' In Marland, M. *Education for the inner city, London,* Heinemann Educational.

Reichenheim, M. (1988) *Child Health in an urban context: Risk factors in a squatter settlement of Rio de Janeiro*, PhD thesis, London University.

Reichenheim, M.E and Harpham, T. (1991) 'Maternal mental health in a squatter settlement in Rio de Janeiro', *British Journal of Psychiatry.* 159: pp 683-690.

Rivas, E.T. (1977) Comentário à apresentação de Alain Touraine, 'As classes sociais', in Zenteno, R.B. *As classes sociais na América Latina: problemas de conceituação*, Rio de Janeiro: Paz e Terra.

Robins L.N., Helzer, J.E., Croughan, J. and Ratcliff, K.S. (1981) 'National Institute of Mental Health Diagnostic Interview Schedule: its history, characteristics and

validity', *Arch Gen Psychiatry*, 38, pp 381-389.

Rodgers, B. (1991) 'Socio-economic status, employment and neurosis', *Soc Psychiatry Psychiatr Epidemiol*, 26, pp 104-114.

Rossi-Espagnet, A. (1984) 'Primary health care in urban areas: reaching the urban poor in developing countries', *A State of the art report by UNICEF and WHO* No.2499M, World Health Organization, Geneva.

Rothman, J.K. (1986) *Modern Epidemiology*, Boston: Little, Brown and Company.

Rutter, M. (1972) 'Relationships between child and adult psychiatric disorders. *Acta Psychiat. Scand*, 8, pp 1-11.

Rutter, M., and Madge, N. (1976) *Cycles of Disadvantage: a review of research*, Heinemann, London.

Rutter, M. and Giller, H. (1983) '*Juvenile deliquency: trends and perspectives*', Harmondsworth: Penguin Books.

Sá, L.S.M. et al. (1987) 'Identificação e conduta dos distúrbios psiquiátricos' in INAMPS/CNPQ/Sociedade Brasileira de Investigação Clínica, *Guia Terapêutico das patologias hospitalares prevalentes*, Rio de Janeiro.

Sackett, D. (1979) 'Bias in analytical research', *J Chron Dis*, 32, pp 51-63.

Santana, V.S. (1977) 'Transtornos mentais em um centro de saúde em Salvador - Bahia', *Rev Bahiana Saúde Publica*, 4, pp 160-167.

Santana, V.S. (1982) 'Estudo Epidemiológico das doenças mentais em um bairro de Salvador', *Séries de estudo em saúde, 3*, Instituto de Saúde do Estado da Bahia, Bahia.

Santana, V.S, Loomis, D.P., Newman, B., Harlow, S.D. (in press) 'Informal jobs: Another occupational hazard for woman's mental hralth', *International Journal of Health Services.*

Santos, M. (1989) *Manual de Geografia Urbana,* 2nd edt, São Paulo: editora HUCITEC.

Sargeant, J.K., Bruce, M.L., Florio, L.P., et al. (1990) 'Factors associated with 1-year outcome of major depression in the community', *Archives of General Psychiatry*, 47, pp 519-526.

Scase, R. (1992) *Concepts in the social sciences: Class*, Bristol: Open University Press.

Secretaria de Planejamento de São Paulo - SEMPLA (1992) *Base de Dados para o Planejamento*, São Paulo.

Secretaria de Saúde de Olinda (1993) *Projeto de Implantação do Sistema Municipal de Vigilância à saúde segundo condições de vida* (mimeo).

Secretaria de Planejamento de Olinda (1988) *Caracterização das áreas carentes do município de Olinda* (mimeo).

Seguin, C.A. (1956) 'Migration and psychosomatic disadaptation', *Psychomatic Medicine*. Vol XVIII, No 5. pp 404-409.

Selingmann, E.S. (1987) 'Saúde mental e trabalho' in *Cidadania e loucura,* Petrópolis: Editora Vozes Ltda, pp 217-288.

Singer, P. (1983) *Economia Política da Urbanização, São Paulo:* Editora Brasiliense.

Smith, D. (1994) 'Despairing middle class fearful about the future', *Sunday Times*, 26 of June.

Stansfeld, S. and Marmot, M.G. (1992) 'Social class and minor psychiatric disorder in British civil servants: a validated screening survey using the General Health Questionnaire', *Psychological Medicine*, 22: pp 739-749.

Stata Corporation (1995), *Stata version 4.0.* Stata Corporation: College Station, Texas.

Statistical Methods in Epidemiology handbook (1996), *Department of Epidemiology and Population Sciences.* London School of Hygiene and Tropical Medicine.

Stephens, C. (1996) 'Healthy cities or unhealthy islands ? The health and social implications of urban inequality', *Environment and urbanization,* 8(2), pp. 9-30.

Stern, J.(1981) 'Unemployment and its impact on morbidity and mortality'. *Discussion paper nº 93*: Centre for Labour Economics, London School of Economics.

Sturt, E., Bebbington. P., Hurry, J., Tennant, C. (1981) 'The present state examination used by interviewers from a survey agency: report from MRC Camberwell Community survey. *Psychological Medicine* 11. 185-192.

Sturt, E. (1981) 'Hierarchical patterns in the distribution of psychiatric symptoms', *Psychological Medicine*,11, pp 783-794.

Surtees, P.G., Dean C., Ingham, J.G., Kreitman, N.B., McMiller, P. and Sashidharan, S.P. (1983) 'Psychiatric disorder in women from an Edinburgh community: association with demographic factors', *British Journal of Psychiatry*. 142: pp 238-246.

Syme, S.L. (1991) 'Social Epidemiology and the Work Environment' in Johnson, JV. and Johansson, G., *The psychosocial work environment: work organization, democratization and health*, New York: Baywood Publishing Company, pp 21-31.

Thoits, P. (1982) 'Conceptual, methodological, and theoretical problems in studying social support as a buffer against life stress', *J. Hlth. soc. Behav.*, 23, pp 145-159.

Thoits, P. (1987) 'Negotiating roles' in Crosby F.J., *Spouse, Parent, Worker, on Gender and Multiple Roles*, London: Yale UP.

Tiffany, D., Cowan J. and Tiffany P. (1970) 'The unemployment, a social psychological portrait', *Prentice Hall, Englenwood Cliffs, NJ.*

Towsend, P., Davidson, N. and Whitehead, M. (1988) *Inequalities in health: the Black report and the health divide*, Harmondsworth: Penguin Books.

United Nation Development Programme - UNDP (1997). *Humman Development Reprt.* Oxford University Press for the UNDP.

Urani, A.(1995) 'Crescimento e geração de emprego e renda no Brasil', *Lua Nova - Revista de Cultura e Política*, 35, pp 5-37.

Valkonen, T. (1989) 'Adult mortality and level of education: a comparison of six countries, in Fox, J. *Health inequalities in European countries*, Aldershot: Gower

Vazquez-Barquero, J., Diez-Manrique, J.F., Pena, C., Aldama, J., Samaniego R.C., Menedez A.J. and Mirapeix , C. (1987) 'A community mental health survey in Cantabria: a general description of morbidity', *Phychological Medicine*, 17, pp 227-241.

Victora, C.G., Huttly, S.R.A., Barros, F.C., Lombardi, C., and Vaughan, J.P. (1992) 'Maternal education in relation to early and late child health outcomes: findings from a Brazilian cohort study', *Soc. Sci. Med.* 34(8): pp 899-905.

Vidal, J.(1997) 'The long march home' *The Guardian Weekend*, April, 26.

Wadsworth, M. (1986) 'Serious illness in childhood and its association with later-life achievement in Wilkinson, R. *Class and Health*, London: Tavistock

Warr, P. and Parry, G. (1982) 'Depressed mood in working-class mothers with and without paid employment', *Social Psychiatry*, 17: pp 161-165.

Warr, P. and Jackson, P. (1985) 'Factors influencing the psychological impact of prolonged unemployment and of re-employment, *Psychological Medicine*, 15: pp 795-807.

Warr, P. (1987) *Work, Unemployment and Mental Health*, Oxford: Clarendon Press.

Warr, P. and Jackson, P. (1987) 'Adapting to the unemployed role: a longitudinal investigation', *Soc.Sci.Med*, 25(11): pp 1219-1224.

Weber, M. (1977) *The Protestant Ethic and Spirit of Capitalism* (Translated Parsons T.), London: George Allen and Unwin.

Weich, S.R. and Lewis, G.H. (in press) 'Material Standard of Living, Social Class and the Prevalence of Common Mental Disorder', *Journal of Epidemiology and Community Health.*

Weich, S.R. Churchill, R., Lewis, G.H. and Mann, A. (1997) 'Do Socio-Economic Risk Factors Predict the Incidence and Maintenance of Psychiatric Disorder in Primary Care?', *Psychological Medicine,* 27(1): pp 73-80.

Weich, S.R. (1997) 'Prevention of the common mental disorders: a public health perspective', *Psychological Medicine,* 27: pp 757-764.

Wells, K.B. et al. (1989) 'The functioning and well-being of depressed patients: Results from the Medical Outcome Study, *JAMA,* 262 (7): pp 914-919.

Wheaton, B.(1980) 'The Socialgenesis of Psychological Disorders: An Attributional Theory', *J. Hlth & Social Behav,* 21(2), pp 100-123.

Wilkinson, R. (1992) 'Income distribution and life expectancy', *BMJ,* 304, pp 165-168.

Wilkinson, R.G., (1996) *Unhealthy Societies: The Afflictions of Inequality,* London: Routledge.

Wilkinson, R. (1997) 'Health inequalities: relative or absolute material standards?', *BMJ,* 314, pp. 591-595.

Wing, J.K., Cooper, P.E., Sartorius, N. (1974). *The measurements and classification of psychiatric symptoms.* Cambridge University Press: Cambridge.

Wing, S. (1993) 'Notes on some themes in critical epidemiology: a proposal', in *A workshop on the analysis of health situation and conditions of life,* Salvador, 8 - 19 March 1990, pp 1-6.

Withington, J. and Wybrow, P. (1988) 'After the ships went down', *New Society,* 83: pp 13-16.

Wohlfarth, T. (1997) 'Socioeconomic inequality and psychopathology: are socioeconomic status and social class interchangeable', *Soc.Sci.Med.,* 45(3): pp 399-410.

World Bank (1989) *Adult Health in Brazil: Adjusting to New Challenges. Report no.7807-BR,* Washington DC: World Bank.

World Bank (1993) *World Development Report 1993,* Oxford: University Press.

World Bank (1995) *World Development Report 1995,* Oxford: University Press.

World Bank (1996) *World Development Report 1996,* Oxford: University Press.

World Health Organization (1993) *A user's guide to the Self Reporting Questionnaire* (draft), Geneva.

Wright, E.O. (1979) *Class Structure and Income Determination*, London: Academic Press Inc.

Ximenes, R. (1991) *Urbanization of Schistosomiasis - Metropolitan Region of Recife. (Social causation of Schistosomiasis in the age-group 10-25 years in the urban area of the "distrito" of São Lourenço da Mata)* PhD.thesis, London School of Hygiene and Tropical Medicine.

APPENDIX 1

SELF REPORTING QUESTIONNAIRE 20

1. Do you often have headaches?
2. Is your appetite poor?
3. Do you sleep badly?
4. Are you easily frightened?
5. Do your hands shake?
6. Do you feel nervous, tense or worried?
7. Is your digestion poor?
8. Do you have trouble thinking clearly?
9. Do you feel unhappy?
10. Do you cry more than usual?
11. Do you find it difficult to enjoy your daily activities?
12. Do you find it difficult to make decisions?
13. Is your daily working suffering?
14. Are you unable to play a useful part in life?
15. Have you lost interest in things?
16. Do you feel that you are a worthless person?
17. Has the thought of ending your life been in your mind?
18. Do you feel tired all the time?
19. Do you have uncomfortable feelings in your stomach?
20. Are you easily tired?

APPENDIX 2

QUESTIONNAIRE

Identification

1.Household number --- --- ---

2.Questionnaire number --- --- ---

Respondent's name----------
3. Address (number, street, and area)
---
4. Sex ---

5. Relationship with the head of the household

6. Date of birth: --- --- ---
day month year
- Date of the interview: --- --- ---
day month year
- Start time:
- Finish time:

7 Interviewer:

8. What is your skin colour?
1. White 2. Black 3.Chestnut-brown 4. Yellow

9. Marital Status
1. Married
2. Single
3. Cohabiting
4. Widowed
5. Separated
6. Other

10. With whom do you live? (Circle all which apply)
1. Alone
2. Wife/Husband or partner
3. Son
4. Parents
5. Grandparents
6. Stepson
7. Parents in law

8. Son/daughter-in-law
9. Brother/sister
10. Grandchildren
11. Brother/sister in law
12. Other relatives
13. Aggregate
14. Maid
15. Friends
16. Other

11. How many people live here who share the same household budget?
---

12. How old are they?

Male ---
< 15 years
Female ---

Male ---
>/ 15 years
Female ---

13. How many generations live in this household?

Education

14. Do you know how to read and write?
1. Yes 2.No

15. Did you ever go to school?
1. Yes 2. No

16. For how long?
00. Never went to school
01. Incomplete first level
02. Completed first level
03. Completed first level but did not complete second level
04. Completed second level
05. Completed second level but did not complete University
06. Completed University
07. Technical course
08. Other What?
Year_____ Grade_____

Place of birth and migration characteristics

17. Where were you born (name, State and if it is rural or urban)?

18. Did you live your place of birth?
If Yes ask questions 19, 20, 21 and 22.

19. At what age?

20. Why did you move?

21. Where did you live before coming to Olinda?

22. What made you choose Olinda and no other place?

Occupation

23. How old were you when you started work?

24. What was your first type of work?

25. Why did you start to work?

26. What is your profession?

27. How did you learn it?

28. Are you working in your profession?
1.Yes
2.No For how long?

29. What is your position in the labour force(employment status)?
1. Employer
2. Employee
3. Unemployed
4. Self-employed
5. Retired
6. Without occupation
7. Housewife
8. Student

30. What is your occupation? (main occupation in the previous week; describe the occupation for example: she is a primary school teacher)

31. What kind of place do you work in?
(specify the type of institution, organization, firm)

32. Describe what do you do.

33. For how long have you been working as----------?
(occupation mentioned in the previous answer)

34. How did you learn it?

35. How many hours do you work per day?

36. How many days per week?

37. Do you work:
1. Regular[1]
2. Guard duty
3. Other What?___
4. Irregular How?____ Why?____
5. 1+2 (if you have 2 jobs)
8. NA

38. Do you work flexi-time?
1. Yes 2. No 8. NA

39. Do you start work at the same time every day?
1. Yes 2. No 8. NA

If the answer for question 37 was guard duty ask questions 40, 41, 42 and 43.

40. What is the shift?
1. Day shift
2. Night shift
8. NA

41. Do the days of the week you work?
1. Remain the same
2. Change
8. NA

42. Do you do other work (including unpaid work) in addition to your shift work?
1. Yes 2. No 8. NA

If the answer was yes ask question 43

43. Is the work between your shifts:
1. Permanent
2. Frequent

[1] The division between answer 1 and 2 for question 37 is clear in Portuguese. In English the closest explanations are that 1. regular is equivalent to working the same duration every day or night and 2. shift/guard duty is for example a policeman being on duty for 2 times 12 hours followed by 2 days off.

3. Rare
8. NA

44. Do you work overtime?
1. Yes 2. No 8. NA

If yes ask questions 45, 46 and 47

45. What is the mean duration of the overtime?

46. Do you do overtime:
1. Always
2. Often
3. Rarely
8. NA

47. Do you do the same work when doing overtime?
1. Yes 2. No 8. NA

48. Do you have a lunch break?
1. Yes 2. No 8. NA

49. Do you have other breaks?
1. Yes How many?
2. No
8. NA

50. What is the mean time that you spend commuting to work everyday?

51. What kind of transport do you use to get to work?
1. By foot
2. By bus
3. By company car
4. By bicycle
5. By private car
8. NA

52. What physical effort do you expend at work?
1. Light
2. Moderate
3. Heavy
4. Very heavy
8. NA

53. Who decides what you should do in your everyday work?
1. Yourself
2. Employer/manager
3. Father/relative

4. Other Who?_____
8. NA

54. Is it possible for you to stop work when you need to or wish?
1. Yes 2. No
Why?

55. How would you classify your work? (Circle those which apply)
1. Creative
2. Monotonous
3. Repetitive
4. Varied (diverse)
5. Other What?

56. What is the product of your work?

57. Who is involved in the production?
1. Only you
2. Other workers
3. Other Who?
8. NA

58. Does your work prevent you from talking with your colleagues?
1. Yes 2. No 8. NA

59. Are you inspected during your work?
1. Yes 2. No 8. NA
By Whom?
How?
In what frequency?

60. Do you have a signed contract?
1. Yes 2. No 8.NA

61. Do you contribute to the INSS?(National health and retirement insurance)
1. Yes 2. No 8.NA

62. In general, do you like your work?
1. Yes 2. No 8. NA
Why?

63. Do you want to change your work?
1. Yes 2. No 8. NA
Why?

64. Why do you work?

65. If possible, would you live without working?

1. Yes 2. No
Why?

66. Beside the occupation you have already mentioned, what occupation(s) have you had in the last 12 months?
a)----------
b)----------
c)----------

67. Where have you worked in the past 12 months?
a)_____
b)_____
c)_____

Salary

68. How much do you earn per month for your main occupation)?
1. less than 1/2 minimum wage
2. more than 1/2 to 1
3. more than 1 to 2
4. more than 2 to 3
5. more than 3 to 5
6. more than 5 to 10
7. more than 10
8. NA (without income including people who are on benefit)

69. Do you earn any money in addition to this?
1. Yes 2. No

If the answer was Yes ask questions 70, 71, 72 and 73.

70. What other sources of income do you have?(Circle all which apply)
1. Pension
2. Benefit
3. Other occupation What?
4. Property
5. Other what?

If the answer was 3 (other occupation) ask questions 71, and 72.

71. How many hours do you work per day in this other occupation?

72. How many days per week?

73. How much did you earn last month from all sources?
1. less than 1/2 minimum wage
2. more than 1/2 to 1

3. more than 1 to 2
4. more than 2 to 3
5. more than 3 to 5
6. more than 5 to 10
7. more than 10
8. NA (without income)

74. Is there anyone else in your household who has an income?
1. Yes 2. No
Who? How much?

If unemployed ask questions 75, 76, 77 and 78.
75. How long have you been unemployed?

76. How long have you been looking for a job?

77. How do you feel about being unemployed?

78. Do you hope to find a job?

If employer ask questions 79 and 80.

79. How many employees (not members of the family) do you have?

80. How many employees are members of your family?

Housework

81. Do you do housework?
1. Yes 2. No
82. What dou you do?
83. Do you do housework:
1. Always
2. Often
3. Rarely

84. How many hours a day do you spend doing this housework?

85. What happens if you do not do this housework?

Living conditions

86. Is your house:
1. Private owned
2. Rented
3. Owned by family/friend

4. Other

87. Are the walls made of:
1. Redbrick 3. Wood
2. Mud 4. Other

88. Is the roof made of:
1. Curved roofing tiling
2. Asbestos
3. Straw
4. Cement
5. Corrugated iron
6. Other

89. Is the floor is made of:
1.Tiles, marble, wood
2.Cement
3. Earth
4. Other

90. Number of rooms:

91. Bathroom
1. Private inside the house
2. Private outside the house
3. Communal
4. Without

92. What is the source of water:
1. Tap water
2. Well
3. River
4. Spring
5. Other
3. River

93. How is water treated:
1. Filtered
2. Boiled
3. Chlorinated
4. No treatment
5. Other

94. How is garbage disposed:
1. Government collection
2. Burnt
3. Buried
4. Open dump

5. Other
3. Buried

95. How is the sewage disposed:
1. Sanitary facilities
2. Septic Tank
3. Directly into rivers,channels,stream
4. Other

96. Do you have electricity?
1. Yes 2. No

Possessions inside the house
(Interviewer's observations or questioning if necessary)

97. Possessions inside the house
a) simple domestic utensils if different from the ones described hereafter
b) cooker
c) refrigerator
d) blender
e) washing machine
f) iron
g) sewing machine
h) electric fan
i) radio
j) television
k) stereo
l) telephone
m) air conditioner
n) bicycle
o) motorbike
p) car

98. Do you feel that the structure of your home is stable?
1. Yes 2. No

99. Do you feel secure in the ownership of your home?
1. Yes 2. No

100. Do you feel that the site of your home is stable?
1. Yes 2. No

101. Do you feel safe from burglary?
1. Yes 2. No

102. Do you feel safe from assault?
1. Yes 2. No

103. Do you feel safe from homicide?
1. Yes 2. No

104. Do you feel safe from other aggressions?
1. Yes 2. No

105. Do you feel safe from traffic accidents?
1. Yes 2. No

106. Do you feel happy?
1. Yes 2. No
Why?

Life Style

107. What is your religion?
1. Catholic
2. Evangelist
3. Spiritualist
4. African practices
5. None
6. Other What?

108. Do you practice religion?
1. Yes 2. No

109. What do you do in your free time?
1. Go outside
2. Go to church
3. Go to free market
4. Go to the beach
5. Go to the pub
6. Go to a football match
7. Watch TV
8. Other What?

110. Do you do any exercise?
1. Yes 2. No
2. What?
3. How often?

111. Do you drink alcohol?
1. Yes 2. No

112. How often?
1. Everyday
2. At weekends
3. Socially

4. Rarely
5. Other

113. What kind of alcohol do you drink?
1. Beer
2. Cachaça
3. Whisky
4. Wine
5. Vodka
6. Rum
7. Champagne
8. Other

114. Where do you drink?
1. At home
2. In family/friends house
3. In clubs
4. In pubs
5. Other

115. With whom?
1. Alone
2. With family
3. With friends
4. Other Who?

116. Do you use regularly any medicine?
1. Yes 2. No

117. What is it?

118. Who prescribed it?

119. Do you belong to a trade union or professional association?
1. Yes 2. No

120. Do you go to its :
1. Meetings 2. Negotiations 8. NA

121. How often?
1. Always
2. Often
3. Rarely
4. Never
8. NA

122. Are you involved in:

1. Community associations	Yes	No
2. Mother's clubs	Yes	No
3. Sport's associations	Yes	No
4. Church's associations	Yes	No
5. Recreative associations	Yes	No
6. Other What?	Yes	No

APPENDIX 3

MANUAL OF INSTRUCTIONS

Cabe ao entrevistador uma grande responsabilidade no processo de coleta de dados. Ele deve estar consciente de que, da sua postura perante o indivíduo (objeto da investigação) depende a qualidade das informações a serem obtidas e, posteriormente, os resultados da pesquisa em questão.

É necessário autoconsciência e vigilância para que o entrevistador mantenha as informações coletadas isentas de suas opiniões próprias e visão de mundo.

Os entrevistadores devem ter sempre presente os princípios da imparcialidade e do respeito diante do entrevistado e das suas opiniões.

Apresentaçao/Identificação do Entrevistador

1. Cordialmente apresente-se dizendo o seu nome, mostrando a credencial de Identificação de entrevistador da pesquisa sobre condições de vida, saúde e trabalho em Olinda - FCM/PMO.
2. Explique em linhas gerais o objetivo de sua visita:"Este é um estudo sobre as condiçoes de vida e saúde da população de Olinda, desenvolvido em conjunto pela FCM e Secretaria de Saúde da Prefeitura Municipal de Olinda. Informe quais as pessoas que serão entrevistadas no domicílio - todos os de 15 anos e mais - sensibilizando-o e motivando-o a fornecer as informações (participar da entrevista).
3. Caso haja resistência por parte da pessoa abordada, não insista. Tente apenas colher algumas informações gerais sobre quantas pessoas moram no domicílio, idade, sexo e ocupação. Passe para o domicílio seguinte da ordem do sorteio. Anote o ocorrido no diário de campo e informe ao supervisor.

Orientações gerais para o preenchimento do questionário

1. O questionário deverá ser aplicado antes do SRQ-20.
2. As perguntas deverão ser feitas exatamente como estão escritas e na mesma ordem.
3. As perguntas que não forem bem compreendidas pelo entrevistado podem ser repetidas e esclarecidas pelo entrevistador.
4. Escrever à lápis e com letra de forma.
5. Nunca deixar informações sem serem preenchidas. Sempre que houver dúvida, escrever por extenso a resposta dada pelo entrevistado no espaço reservado para observações em cada página e deixar para o supervisor decidir.
6. Quando uma resposta do entrevistado parecer pouco confiável, anotá-la e fazer um comentário nas observações sobre sua má qualidade.
7. Não tente fazer contas durante a entrevista porque isto muitas vêzes resulta em erros. Ex: se o salário for indicado em forma de pagamento diário ou semanal, anotá-lo por extenso e não tentar a multiplicação para obter o valor mensal. Isto será feito no final do dia.
8. Nao preencher os quadrados no lado direito do papél. Estes serão preenchidos posteriormente.

Folha de rosto

Os números do questionário e do domicílio serão preenchidos pelo supervisor.
Nome, Endereço, Sexo, Data do nascimento, Data da entrevista, Hora do início e fim da entrevista e o nome do entrevistador, deverão ser preenchidas pelo entrevistador. Só é necessário preencher o primeiro nome por extenso e as iniciais do sobrenome.

Relação com o chefe - escrever por extenso

1. Chefe - pessoa (homem ou mulher) responsável pelo domicílio ou pela família. Em caso de dúvida, deve ser considerado como chefe do domicílio a pessoa que ganhe mais;
2. Cônjuge - pessoa (homem ou mulher) que vive conjugalmente com o chefe do domicílio ou chefe da família, existindo ou não vínculo matrimonial;
3. Filho - inclusive adotivo ou de criação;
4. Enteado - filho somente do cônjuge, mesmo que o cônjuge já tenha falecido ou nao more no domicílio;

5. Pai ou mãe - inclusive padrasto e madrasta;

6. Sogro - mesmo que não seja parente do cônjuge atual;

7. Avô - inclusive só do cônjuge;

8. Neto - inclusive só do cônjuge;

9. Genro - inclusive só do cônjuge;

10. Irmão

11. Cunhado - mesmo que não seja parente do cônjuge atual;

12. Outro parente - sobrinho, tio, prima, inclusive só dó cônjuge;

13. Agregado - pessoa que tem residência fixa no domicílio, sem ser parente, pensionista, empregado doméstico ou parente do empregado, sem pagar hospedagem;

14. Pensionista - pessoa que, sem ser parente, tem residência fixa no domicílio pagando hospedagem;

15. Empregado doméstico - pessoa que presta serviço doméstico remunerado aos moradores do domicílio. Se a empregada doméstica morar no domicílio ela deverá ser entrevistada. Se ela dormir no domicílio, mas tiver seu próprio domicílio, não entrevistar.

Questão 8. Será assinalada a alternativa correspondente à declaração do entrevistado considerando porém que Amarela só se aplica à pessoa de origem oriental e seus descendentes. Nao considerar como Amarela a pessoa que tem a pele amarelada, por sofrer de moléstia. Indígena se aplica nao só ao que vive em aldeamento, como também aos indígenas e seus descendentes que vivem fora de aldeamento. Será assinalada a alternativa parda para as declaraçoes diferentes de branca, preta, amarela ou indígena, tais com: mulata, mestiça, cabocla, cafuza, mameluca,etc.

Para sexo, situação conjugal e com quem você mora, preencher a alternativa do entrevistado. Note que situação conjugal se refere a atual. Se o entrevistado for divorciado mas atualmente tiver uma companheira, a alternativa a ser preenchida é a de $n^0 3$ (companheiro).

Questão 10. Pode ser preenchida com mais de uma alternativa. Ex: 2 e 3 (esposa e filhos).

Questão 11. Deve ser preenchido com o n^0 total de residentes no domicílio. Domicílio será considerado como todos que compartilham o mesmo teto e orçamento e comem da mesma comida. Nao é necessário que todos sejam membros da família. Caso em um mesmo endereço haja mais de um domicílio (edifício de apartamentos, casa de cômodos,

etc.) todos os domicílios deverão ser entrevistados, embora devam ser registrados com número de domicílio diferentes. Se a empregada doméstica morar no domicílio ela deverá ser contada. Se ela dormir no domicílio, mas tiver seu próprio domicílio, nao contar.

Questão 12. Quantificar os homens e mulheres residentes no domicílio que são menores de 15 anos e que têm 15 anos e mais.

Questão 14.

1. Sabe ler e escrever - pessoa capaz de ler e escrever pelo menos um bilhete simples no idioma que conhece; ou

2. Não sabe - pessoa que nunca aprendeu a ler e escrever ou que aprendeu e esqueceu. Considerar também como não sabendo ler e escrever a pessoa que só é capaz de escrever o próprio nome.

Questão 16. Colocar de lápis a série e o grau cursados.

Questão 17. Preencher todas as informações sobre o local de nascimento (cidade e unidade federada) se urbano ou rural. Apoios nao devem ser preenchidos para nascimento , devendo ser preenchidos para cada mudança. Ocupação se refere à atividade de trabalho desenvolvida no local e deve ser descrita com detalhes. Ex: trabalhava no corte da cana. Motivo se refere ao que fez com que entrevistado saísse do local onde nasceu e futuros locais de residência e deve ser escrito por extenso. Caso nao haja espaço suficiente, utlizar as observações no final da página. Ex: mudou-se porque casou, para acompanhar a família, em busca de melhor emprego, etc. Apoio se refere à percepção do entrevistado. Se ao migrar ele se sentiu apoiado/ajudado pelas alternativas (mais de uma alternativa pode ser assinalada).

Questão 20. Referir se o trabalho era habitual ou eventual

eventual.

Trabalhou habitualmente - a pessoa que exerceu uma ocupação remunerada, mesmo que somente algumas horas diárias, semanais ou mensais como assalariado, conta própria ou empregador, e não remunerada que trabalhou habitualmente pelo menos 15 horas semanais. Estao incluídos na categoria: a) pessoa que exerceu um trabalho sazonal, estacional ou intermitente, com é o caso das pessoas que sao contratadas em determinados períodos para uma atividade agrícola, para atividade de extraqçao vegetal ou de extraçao mineral.

Trabalhou eventualmente - a pessoa que somente exerceu durante um período trabalho

remunerado, sem possibilidade de continuar devido a situaçoes diversas, como:

a) estudante no período de férias;

b) falta de oferta de trabalho - para as pessoas que só trabalham em estabelecimentos industriais ou serviços de confecção, em época de produçao intensiva;

c) Em estabelecimentos comerciais ou de serviços durante eventos periódicos como p ex: carnaval;

d) Por nao desejar ou por falta de oferta só trabalhou ocasionalmente, mas conhecido como "Biscateiro" ou que faz bicos.

Questão 22 - Profissão será considerada como habilidade adquirida através de experiência ou cursos.

Questão 25. Refere-se à ocupação principal. Considerar empregador a pessoa que explora uma atividade econômica com auxílio de um ou mais empregados;

empregado a pessoa que exerce uma atividade econômica ou trabalha em estabelecimento, negócio, instituição, escritório, consultório,etc., onde trabalham ou não outras pessoas na condição de empregado;

desempregado a pessoa que está procurando emprego, já tendo trabalhado ou não; doente ou inválida sem ser licenciada do trabalho.

conta própria a pessoa que exerce uma atividade individualmente ou com ajuda de pessoa não remunerada moradora no domicílio (trabalhador doméstico por conta própria é a pessoa que presta serviços domésticos remunerados normalmente a mais de um patrão, não diariamente, em geral recebendo por dias efetivamente trabalhados com é o caso de faxineira, lavadeira)

Se o aposentado tiver uma ocupação principal, ele entra como empregado.

Desocupado a pessoa que nao está trabalhando e nem procurando emprego.

Questão 26. Ocupação não é profissão. O entrevistado pode ser pedreiro (profissão) mas como está "parado" (sem emprego na construção civil) estar trabalhando como vendedor de picolé (ocupação). Note que ocupação se refere à recente (na semana anterior). Para a pessoa de férias ou de licença, mesmo que esteja exercendo outra ocupação, será registrada a ocupação habitual e não a exercida transitoriamente durante as férias ou licença. Caso haja mais de uma ocupação, colocar a principal. Considera-se como ocupação principal aquela em que a pessoa se ocupa o maior número de horas semanalmente ou, em caso de igualdade, a que proporciona maior rendimento.

Questão 27. Detalhar o máximo possível.Ex: na fábrica da Antártica; na empresa de ônibus Oliveira,etc.

Questão 28. refere-se ao departamento ou setor. Ex: Trabalha no setor administrativo da fábrica, ou no engarrafamento.

Questão 31. As vêzes o entrevistado nao sabe dizer ou se enquadrar num setor, funçao e no cargo. Descrever com detalhes para que possamos enquadrá-lo posteriormente.

Questão 42. Permanente refere-se a se ele sempre exerce atividades entre os plantões. Ex: tem um outro emprego/ocupação.

Frequente, se ele frequentemente faz alguma atividade. Ex: resolve problemas bancários, cuida da casa, etc. Raras: se ele sempre descansa entre os plantoes e só raramente necessita fazer alguma atividade.

Questão 51. Utilizar a classificação do Estudo Multicêntrico de Diabetes.

Leve quando o trabalho principal é feito quase que exclusivamente sentado. Ex: conserto de eletrodomésticos, trabalho industrial sentado, motorista, costureira, trabalho em escritório, etc.;

Moderado quando anda bastante no trabalho, mas não ergue ou carrega objetos pesados. Ex:comerciante, lojista, trabalho industrial leve, office boy, contínuo, auxiliar de escritório,etc.;

Pesado quando caminha muito no trabalho, transportando cargas pesadas ou subindo escada, ou então andando em terrenos com declives;

Muito pesado quando o trabalho exige muito esforço físico, tendo que levantar ou transportar cargas pesadas, cavar buracos ou poços, escavações, trabalho com pás, picaretas, enxadas ou perfuratrizes, estiva, trabalho agrícola pesado manual, construçao civil (serventes, pedreiros,etc.)

A partir da questao 86 é possível mais de uma alternativa correta.

Questão 52. Quem determina o que ele deve fazer diariamente.

Questão 53. Refere-se por ex se ele pode parar se estiver cansado, para relaxar, para atender telefone,etc.

Questão 54. Provavelmente as respostas serão diferentes das opções. Ex: chato, bom. Escrever por extenso. Esta questão pode ter mais de uma resposta. Note que variado nao é necessariamente criativo. Um contínuo pode ter atividades variadas tais como servir café, ir ao banco, levar correspondência, etc., mas este trabalho nao é criativo. Mesmo que

a primeira resposta seja difernete das alternativas, insistir sobre cada alternativa ou seja se o trabalho é criativo, monótono,etc.

Questão 55. Refere-se a parafusos, carro, cerveja,etc. Anotar a resposta do entrevistado, mesmo que você ache que o trabalho dele nao tem produto.

Questão 56. Se ele trabalha numa fábrica de cerveja e sua função é só colocar as tampas, ele produz com outros trabalhadores. Mas, se ele é artesão e fabrica sapatos, o produto final depende só dele.

Questão 57. Um caixa de banco pode conversar. Mas quando ele está conferindo um troco ou registrando alguma operação, provavelmente ele dirá que isto o impede de conversar.

Questão 65. Refere-se à rotatividade de ocupação nos últimos 12 meses. Ex:trabalhou como pedreiro por 6 meses.

Questão 66. Refere-se à rotatividade de local de trabalho nos últimos 12 meses.Ex: trabalha para a Oderbrecht (construtora) trabalhou na construção de um posto de saúde por 6 meses, depois na construção de um viaduto nos outros 6 meses. Faxineira diarista - trabalha em várias casas.

Questão 67. Sempre preencher em cruzeiros. Posteriormente faremos a conversão para SM e dólares. Observar que a pergunta se refere à ocupação principal. Aposentadoria, pensões, benefícios, não são ocupações.

Questão 69. Poderá ter mais de uma resposta.

Questão 73. Quem? deve ser preenchido com a relação com o entrevistado.Ex: filho

Questão 89. Não contar como cômodos garagem, terraço, vão e corredor. Se o banheiro e a cozinha forem coletivos, também não contar como cômodos.

Questão 97. Assinalar para cada alternativa sim ou não.

Questão 119. Assinalar para cada alternativa sim ou não.

APPENDIX 4

Adjusted Odds Ratios (OR) for being a case of CMD by SES variables stratified by gender, confidence intervals(95% CI) and likelihood ratio statistics (LRS)

	MALES			FEMALES		
VARIABLES	OR[1]	LRS χ^2	p-value	OR[1]	LRSχ^2	p-value
AGE						
15-24	1.00			1.00		
≥25	1.29 (0.5-3.4)	0.26	0.61	2.14 (1.1-4.3)	5.20	0.02
MARITAL STATUS						
Single	1.00			1.00		
Other	1.05 (0.5-2.2)	0.02	0.90	0.80 (0.4-1.5)	0.50	0.48
LITERACY						
Literate	1.00			1.00		
Illiterate	0.95 (0.3-2.9)	0.01	0.93	2.33 (1.1-4.8)	4.57	0.03
EDUCATION (years)						
0-7	4.24 (1.7-10.5)	11.57	<0.001	1.77 (1.0-3.1)	4.13	0.04
≥8	1.00			1.00		
OCCUPATION						
Non-manual	1.00			1.00		
Manual	1.12 (0.5-2.6)	0.08	0.96	1.17 (0.6-2.3)	0.26	0.88
Other	1.07 (0.2-4.8)			1.02 (0.6-1.8)		
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (minimum wage)						
0 - 1/4	4.85 (1.3-18.4)	7.50*	0.006	1.32 (0.5-3.5)	0.35	0.84
>1/4-1	1.31 (0.4-4.1)			1.10 (0.6-2.2)		
>1	1.00			1.00		
HOUSE OWNERSHIP						
Owned	1.00			1.00		
Rented	0.52 (0.2-1.3)	1.88	0.17	0.82 (0.4-1.5)	0.42	0.52
HOUSING CONDITION INDEX						
High	1.00			1.00		
Medium	0.71 (0.2-2.2)			0.74 (0.3-1.6)		
Low	0.67 (0.2-2.4)	0.37	0.83	2.10 (0.7-6.0)	7.45	0.02
POSSESSIONS INDEX						
High	1.00			1.00		
Low	0.58 (0.2-2.1)	0.57	0.45	1.77 (0.7-4.5)	1.90	0.17

[1] Adjusted for the other variables in the table

* Likelihood ratio statistics for trend

APPENDIX 5

Unadjusted and Adjusted Odds Ratios (OR) for being a case of CMD in the subsample from the validation study, using psychiatric definition of caseness, by demographic and socioeconomic variables, confidence intervals (95% CI) and likelihood ratio statistics (LRS)

VARIABLES	UNADJUSTED OR	ADJUSTED OR[1]	LRS χ^2	p-value
GENDER				
Male	1.00	1.00		
Female	3.18 (1.1-8.8)	1.63 (0.6-4.7)	0.82	0.36
AGE				
15-24	1.00	1.00		
25-54	2.58 (0.8-8.5)	6.61 (1.4-30.7)		
≥55	6.09 (1.3-27.4)	8.41 (0.8-87.7)	7.97	0.02
MARITAL STATUS				
Single	1.00	1.00		
Married	1.36 (0.5-4.0)	0.29 (0.1-1.1)		
Separated/widowed	5.49 (1.2-25.0)	0.48 (0.1-3.4)	4.11	0.13
EDUCATION (years)				
0-4	8.94 (2.6-31.0)	13.23 (2.6-68.3)	10.14*	0.001
5-7	3.17 (0.8-12.7)	9.03 (1.7-48.6)		
8-10	1.11 (0.3-4.0)	1.69 (0.3-9.9)		
≥11	1.00	1.00		
OCCUPATION				
Manual	1.00	1.00		
Non-manual	2.67 (0.8-8.5)	0.46 (0.1-3.1)		
Housewives	5.68 (1.4-22.7)	0.69 (0.1-4.1)		
Students	1.15 (0.2-7.8)	0.45 (0.1-2.5)	1.63	0.65
HOUSEHOLD *PER CAPITA* MONTHLY INCOME (minimum wage)				
0 - 1/4	1.62 (0.3-7.7)	2.28 (0.2-23.7)	0.00*	0.96
>1/4 - 1	1.82 (0.5-6.0)	3.29 (0.8-13.5)		
>1	1.00	1.00		
HOUSING CONDITION INDEX				
High	1.00	1.00		
Median	0.28 (0.0-2.1)	0.11 (0.0-1.3)		
Low	0.38 (0.0-2.9)	0.25 (0.0-2.6)	7.57	0.02
POSSESSIONS INDEX				
High	1.00	1.00		
Median	0.45 (0.1-2.6)	0.16 (0.0-1.7)		
Low	0.65 (0.0-7.9)	0.11 (0.0-2.2)	4.78	0.09

[1] Adjusted for the other variables in the table, literacy and house ownership

* Likelihood ratio statistics for trend

APPENDIX 6

Unadjusted and Adjusted Odds Ratios (OR) for being a case of CMD in the subsample from the validation study, using psychiatric definition of caseness, by employment status and migration, confidence intervals (95% CI) and likelihood ratio statistics (LRS)

VARIABLES	UNADJUSTED OR	ADJUSTED OR	LRS χ^2	p-value
EMPLOYMENT STATUS[1]				
Whole sample				
Formal workers	1.00	1.00	4.08	0.25
Informal workers	1.84 (0.6-5.9)	1.01 (0.2-4.2)		
Unemployed	2.41 (0.5-11.0)	2.81 (0.5-15.7)		
Inactive	3.00 (0.9-10.4)	0.91 (0.2-4.3)		
Females				
Formal workers	1.00	1.00	1.69	0.79
Informal workers	2.25 (0.4-13.2)	2.37 (0.4-13.3)		
Unemployed	0.91 (0.1-7.5)	1.77 (0.3-13.6)		
Housewives	2.22 (0.3-15.4)	1.29 (0.1-10.7)		
Inactive	1.91 (0.2-15.0)	2.07 (0.2-17.6)		
Males				
Formal workers	1.00	1.00	7.19	0.07
Informal workers	0.46 (0.1-2.9)	1.12 (0.1-12.1)		
Unemployed	4.21 (0.4-40.8)	38.80 (2.0-765.0)		
Inactive	0.56 (0.1-3.8)	0.64 (0-0-347.2)		
MIGRATION[2]				
Natives	1.00	1.00		
Migrants	2.06 (0.8-5.6)	0.99 (0.3-3.5)	0.00	0.98

[1] Adjusted for age, marital status, education, occupation, *per capita* monthly income, housing condition and migration

[2] Adjusted for age, education, marital status, *per capita* monthly income, housing condition and the interaction between gender and employment status